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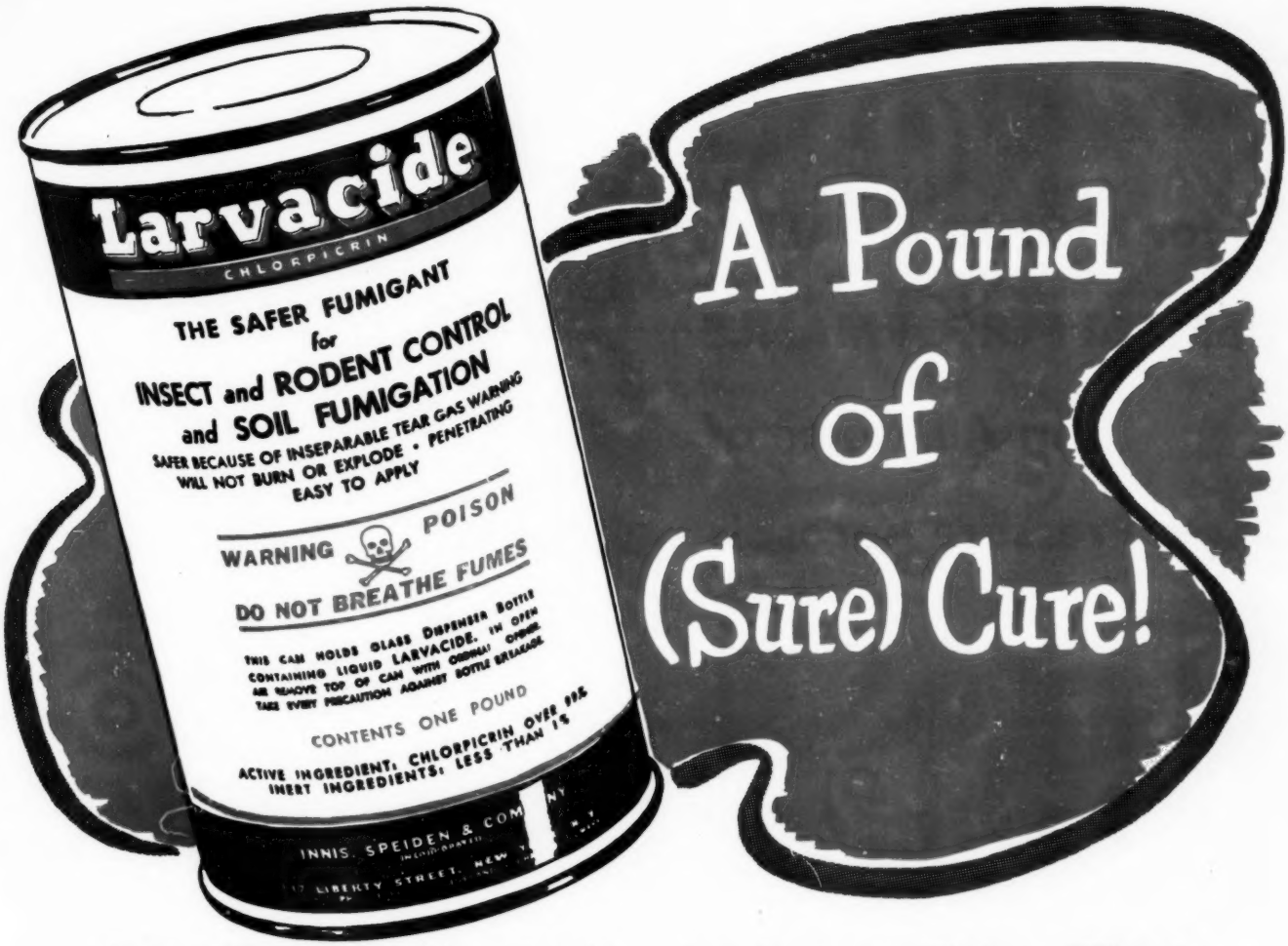

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PESTS and their CONTROL

JAMES A. NELSON
Editor

JOSEPH R. GROSS
Associate Editor

Cooperating with

NATIONAL PEST CONTROL ASSOCIATION

Contributed articles in this publication do not necessarily reflect the opinions of the editors. Discussions, comments and all types of material pertaining to pest control and other sanitation services are invited from those interested in the advancement of the field.

All contributions must be in our hands by the 15th of the month preceding issue for which they are intended.

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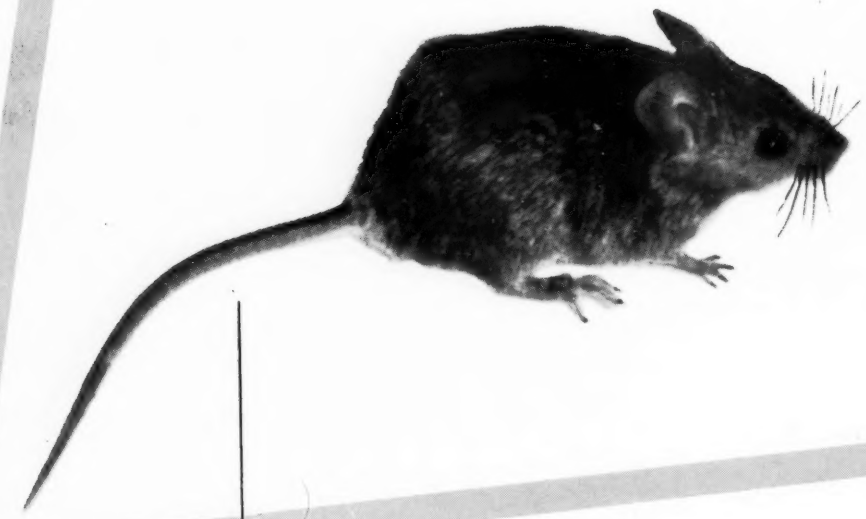

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The TOXICOLOGY of the Newer Agricultural Chemicals

by

ARNOLD J. LEHMAN, M.D.

Chief, Division of Pharmacology
U. S. Food and Drug Administration

IN THE development of insecticides the fundamental purpose is to determine the effectiveness of the poison under given conditions and the best methods of application. Insect toxicology is usually concerned with the smallest amount of the poison which will kill all individuals. This is in contrast with the broader aspects of the problem which are concerned with the pharmacologic effects of the poison in animals and man and deal with the largest amount which will not produce injury. This latter phase will be discussed here and an attempt will be made to appraise the present status of the newer as well as some of the older agricultural chemicals. A list of the insecticides to be considered follows:

DDT (dichloro - diphenyl - trichloroethane).

TEP (tetraethylpyrophosphate).

Parathion (O,O-diethyl O-p-nitrophenyl thiophosphate).

HETP (hexaethyltetraphosphate).

Nicotine.

Chlorinated Camphene (68% chlorine)

Rotenone

GBH (gamma isomer of benzene hexachloride)

Lethane-384 Special (a mixture of three parts Lethane-60 (beta-thio-cyano-ethyl esters of aliphatic acids with 10-18 carbon atoms) and one part of Lethane-384 (beta-butoxy-beta-thio-cyano-diethyl ether) plus refined paraffin)

Lethane-60 (beta-thio-cyano-ethyl esters of aliphatic acids with 10-18 carbon atoms)

ABH (alpha isomer of benzene hexachloride)

Chlordane (1,2,4,5,6,7,8,8-octachloro-4,7-methano-3a,4,7,7a-tetrahydroindan)

Thanite (isobornyl-thiocyano-acetate)

DBH (delta isomer of benzene hexachloride)

Pyrethrins

TDE (dichloro-diphenyl-dichloroetnane)

BBH (beta isomer of benzene hexachloride)

Methoxychlor (dimethoxy-diphenyl-trichlorethane)

N-propyl isome (di-n-propyl-6,7-methylenedioxy-3-methyl-1, 2, 3, 4-tetranydronaphthalene - 1, 2 - dicarboxylate)

Piperonyl butoxide ((butylcarbityl) (6-prophy piperonyl) ether))

Heptachlor (1,2,4,5,6,7,8,8-octochloro-4,7-methano-3a,4,7,7a-tetrahydroindan dehydrohalogenated)

Acute Toxicity

The insecticides vary widely in their propensity to produce injury following the ingestion of a single dose. In tabel 1 the mean ethal dose by oral administration is listed for each insecticide. Comparisons with DDT are listed also. It may be pointed out that the organic phosphate compounds and nicotine are extremely poisonous and rapid in their action. The lethanes and thanite, while not as dangerous poisons as the organic phosphates, have a rapid effect, producing collapse and death within a few minutes. Of the chlorinated hydrocarbon insecticides, chlorinated camphene appears to be the most toxic of the group, followed by the gamma isomer of benzene hexachloride and chlordane. The remaining compounds, including the pyrethrins and the insect activators N-propyl isome and piperonyl butoxide, have such a low order of acute toxicity that the hazards from accidentally ingesting a single dose of these materials appear to be of minor importance. Rotenone poisoning presents a considerable species variation. To our knowledge no human cases of poisoning have been reported and it is probably safe to assume that man is among the less susceptible species to the toxic effects of this insecticide.

Toxicity by Dermal Application

The health hazards connected with the handling of insecticides in manufacturing processes and spraying procedures place considerable importance on the ability of the various insecticides to penetrate the skin. Because of the large number of compounds to be

NOTE: Presented at the 52nd Annual Conference of the Association of Food and Drug Officials of the United States, Portland, Maine, June 14-18, 1948. Published in the Association of Food and Drug Officials of the United States, Quarterly Bulletin, Vol. XII Number 3, July, 1948.

TABLE 1

Comparison of the acute oral toxicities of insecticides with DDT

INSECTICIDE	MEAN LETHAL DOSE mg./kg.	RATIO
DDT	250	1
TEP	2	125
Parathion	3.5	70
HETP	7	35
Nicotine	10	25
Chlorinated Camphene	60	4
Rotenone	60 (to 3,000)	4
GBH	125	2
Lethane-384 Special	400	5/8
Lethane-60	500	1/2
ABH	500	1/2
Chlordane	500	1/2
Thanite	1,000	1/4
DBH	1,000	1/4
Pyrethrins	1,500	1/6
TDE	2,500	1/10
BBH	6,000	1/24
Methoxychlor	6,000	1/24
N-propyl isome	10,000	1/40
Piperonyl butoxide	12,800	1/50

studied, not all phases of this problem have been completed. Table 2 summarizes the results to date. It is worthy of note that all of the compounds are more dangerous to handle when in solutions than when in wettable powder or dust form. Parathion and nicotine are the exceptions. Futhermore, repeated exposures increase the hazards to as much as 200 times that of a single exposure. A disturbing feature from the standpoint of skin irritation is that the organic phosphates are only slightly irritating. This means that there is no immediate warning sign of impending danger and could lead to their careless use. The chlorinated compounds, although skin irritants in concentrated form, lose this property on dilution and consequently do not give an adequate danger signal of approaching over-exposure. The table gives also the estimated total quantities to which man can be exposed on single application and daily contact before approaching dangerous levels.

Splashings into the eye appear to be a hazard only with respect to the organic phosphates. Experimental evidence shows that a small drop of undiluted TEP spattered into the eye might prove fatal to man.

Chronic Toxicity

One of the most important phases of the investigation for appraising the hazards of insecticides is the long-range effect of ingesting spray residues contaminating fruits and vegetables. A summary of chronic toxicity, much of it preliminary data, is presented in table 3. DDT is probably the only member of the group listed which has received extensive study. It may be seen from the table that chronic toxicity bears no relation to acute toxicity. The outstanding example of this is the case of the beta isomer of benzene hexachloride. It is not possible to administer a sufficient quantity of this isomer orally as a single dose to kill a rat. However, when fed chronically concentrations as low as 10 parts per million in the diet produced gross evidence of poisoning. Of particular interest also is the response of animals chronically exposed to chlorinated camphene. Rats can ingest a quantity of the compound in the course of 24 hours which, if administered as a single dose, would be fatal. Chlorinated camphene bears a close chemical relationship to camphor and it is known that camphor is readily detoxified in the liver. It is believed that when the chlorinated camphene is ingested in small amounts over an extended period of time, the detoxication keeps pace with the intake thus preventing dangerous concentrations from being reached in the body tissues. Preliminary studies on chlordane indicate that rats cannot tolerate 250 parts per million in their diets for longer than 12 weeks. The analogs of DDT (TDE and methoxychlor) appear to require high levels of feeding before evidence of injury develops.

TABLE 2

Toxicity by dermal application

INSECTICIDES	Skin Irritation	Quantities Dangerous Upon Skin Application			Quantities Dangerous to Man (Est'd)	
		Single Exposure		Multiple Exposure	Single Exposure	Multiple Exposure
		Dry	Solution	Solution		
		mg./kg.	mg./kg.	mg./kg.	grams	grams/day
DDT	None	None	2,820	150	169	9
TEP	Slight		10	5	0.6	0.3
Parathion	Slight	40	50	5	3	0.3
HETP	Slight			5		0.3
Nicotine	Moderate	60	50	40	3	2.4
Chlorinated camphene	Moderate	4,000	780	40	46	2.4
Rotenone	Mild	None			None	
GBH	Moderate	4,000	50	20	3	1.2
Lethane-384 special	Moderate		500	125	30	7.5
Lethane-60	Moderate		5,000	500	300	30
Chlordane	Moderate		1,880	40	113	2.4
Thanite	Moderate		5,000	1,000	300	60
Pyrethrins	No data					
TDE	Slight		2,820	100	169	6
Methoxychlor	Slight		2,820	600	169	36
N-propyl isome	None		376	160	21.5	9.6
Piperonyl butoxide	None		1,880	200	108	12
Heptachlor	Moderate	2,000	780	20	46	1.2

The chronic effects of some of the newer insecticides have been studied in dogs also (table 4). It is necessary to employ a different approach when using dogs for chronic experiment and for this reason comparable figures for dogs and rats are not available. In general it may be stated that dogs are more susceptible to injury from the insecticides than rats.

Pathology

The predominant pathologic lesions produced by the various insecticides are summarized in table 5. In general the organic phosphates produce their principal injury in the gastrointestinal tract. Practically all of the chlorinated compounds injure the liver. The lower levels of intake of the various insecticides at which tissue damage may be expected have been established with some assurance in possibly only two instances, namely, DDT and rotenone. Beginning liver damage has been noted in rats when fed at a level of 5 parts per million in the diet of DDT. In the case of rotenone it has been estimated that something like 3.75 parts per million in the diet is capable of producing liver injury in the rat.

TABLE 4

Chronic toxicity in dogs

INSECTICIDE	DIETARY LEVELS	REMARKS
	p. p. m.	
DDT	2,640	Death in 50 days
Chlorinated Camphene	330	Death in 33 days
Rotenone		2 gm./kg. single doses; survival
GBH	330	Death in 30 weeks
ABH	2,000	Death in 44 days
Chlordane	660	Death in 4 weeks
DBH	3,960	Death in 14 weeks
Pyrethrins	Larger amounts	Survival
TDE	1,650	Survival for 19 months
BBH	1,320	Death in 90 days
Methoxychlor	10,000	Survival for 6 months

General Considerations

IT IS A fairly safe assumption that chemicals which are toxic to insects are also toxic to man and animals. The great emphasis which has been placed on the specificity of DDT for insects loses its importance when fatal doses are compared on a body-weight basis with warm-blooded animals. On this basis the quantities required are practically identical. Furthermore, the least toxic of the insecticides which are listed in this paper may not actually be the safest, since larger quantities of the poison must be used to insure effective insect control.

The fate of the insecticide in the body also has an important bearing on the hazards which exist in the use of these materials. It is known that DDT is stored in body fat at a level 4 to 10 times that of the dietary intake. Gamma isomer of benzene hexachloride storage is about equal to that of the concentration in the diet. A disturbing feature of the distribution of this poison is its appearance in brain tissue. So far as is known, DDT does not possess this tendency. Tissue storage studies with the analogs of DDT show that TDE has a greater tendency to accumulate in the fat than DDT, and methoxychlor probably less so. The fact that DDT is secreted in the milk is already a matter of record. It is suspected that the other chlorinated insecticides behave likewise. This is especially important in cases of infants, where the chief diet is milk. Chemical methods for the isolation of chlorinated camphene or chlordane have not yet reached the stage where it is possible to determine micro quantities and for this reason no distribution studies of these compounds have been made. It is known that parathion has a cumulative action which points toward tissue storage of this insecticide. Translocation of parathion in plants has been proven experimentally, thereby creating a new hazard not enjoyed by any of the other insecticides, with the possible exception of rotenone.

(Continued on page 11)

TABLE 3

Chronic toxicity in rats

INSECTICIDE	LOWEST LEVEL PRODUCING GROSS EFFECTS	DURATION	REMARKS
	p. p. m.*	weeks	
DDT	100	104	
Parathion	25	4	
HETP		12	1000 p. p. m.; no effect
Nicotine	60	43	
Chlorinated camphene		8	1200 p. p. m.; no effect
Rotenone	31.2	16	
GBH	400	52	
Lethane-384 special			No data
Lethane-60			No data
ABH	800	43	
Chlordane	250	12	
Thanite			600 mg./kg./day fatal in 4-12 weeks
DBH	3,200	52	
Pyrethins			500 mg./kg./day fatal in 2 weeks
TDE	2,500	104	
BBH	10	36	
Methoxychlor	5,000	16	
N-propyl isome			No data
Piperonyl butoxide			No data

* p. p. m. — parts per million

Photo courtesy of Exterminating Services Corp., New York, N. Y.

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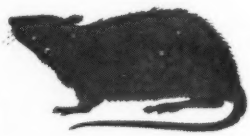

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TABLE 5

Pathology in chronically poisoned animals

INSECTICIDE	PREDOMINANT INJURY
DDT	Liver necrosis and cerebellar degeneration
TEP	Enterocolitis and gall bladder necrosis
Parathion	Enterocolitis and gall bladder necrosis
HETP	Gall bladder necrosis
Nicotine	Inanition
Chlorinated Camphene	Liver necrosis
Rotenone	Liver necrosis
GBH	Kidney and liver necrosis
Lethane-384 special	Generalized organ damage
Lethane-60	No data
ABH	Liver and kidney damage
Chlordane	Liver damage and inanition
Thanite	Liver damage
DBH	None reported
Pyrethrins	None reported
TDE	Adrenal cortext damage
BBH	Liver damage
Methoxychlor	Kidney damage
N-propyl isome	Negative
Piperonyl butoxide	Negative
Heptachlor	Liver damage

(from page 9)

Nothing is known of the dangers incumbent to the use of many of the economic poisons as aerosols. DDT has a factor of safety of several hundredfold under such conditions. The hazards of aerosol formulations of chlordane, chlorinated camphene, gamma isomer of benzene hexachloride and the organic phosphates, to mention a few, can only be surmised. Every precaution should be exercised in their use at this early stage of their development.

Combinations of pyrethrins and rotenone with the two insecticide activators, piperonyl butoxide and N-propyl isomer, appear to be the safest for use from all standpoints. However, even here the possible limitations of these combinations await the outcome of the more prolonged laboratory observations, especially lifetime feeding studies of the activators.

For detailed information on the various aspects of the toxicology of the newer agricultural chemicals discussed above, the following references should be consulted:

1. Acute and subacute toxicity of DDT to laboratory animals. Geoffrey Woodard, Arthur A. Nelson and Herbert O. Calvery (Food and Drug Admin., Washington, D. C.). J. Pharm. & Exper. Therap. 82, 152-58 (1944).

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8. Adrenal cortical atrophy and liver damage produced in dogs by feeding DDD. Arthur A. Nelson and Geoffrey Woodard (Food and Drug Admin., Washington, D. C.). Fed. Proc., Part I, 277 (1948).

9. Chronic Nicotine Toxicity. R. H. Wilson and F. DeEds (Public Health Service, Bethesda, Md.). J. Ind. Hyg. & Tox. 18, 553 (1936).

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According to a recent statement in *The Crusader*, if you killed a female fly last May you prevented the birth of millions of flies during the summer. It's estimated that the number of flies a female and her descendants can produce in one season is a 5 followed by 29 zeroes.

—BOOK REVIEW—

TEXTBOOK OF ENTOMOLOGY

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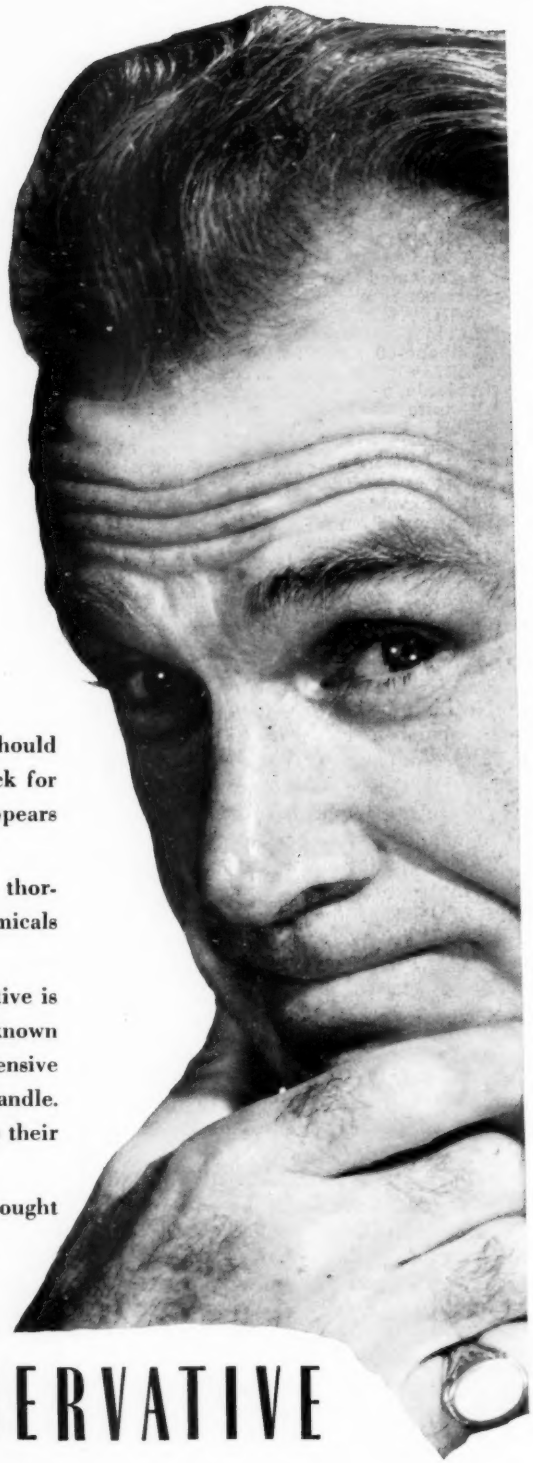
Professor Ross, in addition to his teaching duties, has been connected with the Natural History Survey, Urbana, Illinois, since 1931 as Systematic Entomologist. A graduate of the University of British Columbia and holder of M.S. and Ph.D. degrees from the University of Illinois, he is also secretary of the Entomological Society of America.

"A Textbook of Entomology" can be obtained by sending $6.00 plus 15 cents postage to John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, New York.

Jackson, Miss., Installs Rat Drinking Fountains

Correspondent, E. E. Gentry, Marthaville, La., sends in this story from a Jackson, Miss. newspaper. It says that Jackson will begin to install rat drinking fountains containing 1080 in the business establishments of the city. City pest control director, R. E. Lane, is in charge of the program. The fountains, locked into a metal box, will be serviced for the entire year by the city, but there is an initial cost of $3.50 each for the equipment, which is paid by the business directly to the maker of the boxes. Previously, the city placed paper souffle cups of the poison, but now is going into rat poisoning on a permanent basis. None of the boxes and fountains will be placed in homes.

Do YOU make the Profit you should on termite jobs?



By ordinary standards, operations against termites should be your most profitable work. If you have to go back for re-treatments at no charge, however, the profit disappears in a hurry.

Of course, you've got to do a thorough job—but thoroughness of application won't save you unless the chemicals you use are certain and lasting in effectiveness.

Tests covering 13 years prove that Penta Preservative is certain and lasting as a termite treatment. No other known chemical shows better results. Yet Penta has no offensive odor, leaves no unsightly stain, is not dangerous to handle. It's the ideal material for P.C.O.'s who want to *keep* their profits on termite jobs.

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CHLORDANE and DERMITITIS

By DR. J. J. JACOBS
Consultant, Los Angeles, California

IT IS RECOGNIZED by most authorities that a revolution is taking place in the insecticide industry which is having a terrific impact on pest control operators. This upheaval was precipitated largely by the development and use of DDT during the war. However, like all revolutions, the roots extend back much further than the immediate causes. Extensive research was being carried out by many chemical companies even before the war started. The reams of free publicity and the extensive use to which DDT was put during the war served to act as a spur to this research and as a consequence new developments in the insecticide industry are proceeding at a rate such as to cause confusion among those people who have to use these new chemicals. While a few years back it was not uncommon to require five years between the discovery of the insecticidal value of a new chemical and its ultimate use in the field, recent developments have come so rapidly that the long, cautious waiting period is no longer possible. People have been conditioned to rapid change and the demand for new products is constantly forcing the use and trial of new materials before all of the manifold questions have been finally answered.

While DDT eliminated some of the previous problems of the PCO's, it was by no means the cure-all that advance publicity may have led one to believe.

Although DDT may not have answered all of the PCO's problems, the new chlorinated organic chemical chlordane represents a tremendous step forward in simplifying the PCO's procedures and operations. In an attempt to determine the extent of use and general reactions to this new chemical, an independent survey of a large number of PCO's on the West Coast was carried out to get their reactions to its use. The general concensus of opinion was that chlordane is the most outstanding insecticide which has been added to the PCO's equipment in recent years.

Chlordane is ordinarily used by most PCO's in oil solutions or emulsions containing 2% to 3% by weight or as a dust in concentrations from 2% to 5%. The dusts are used only in out of the way places where appearance is unimportant or for migratory insects. The use of oil solutions or emulsions for inside work is preferable especially in view of the greater residual toxicity of the oil deposited films. Some operators use Thiocyanates or pyrethrum in conjunction with it for special jobs although in some reported applications the additional value was doubtful. Mixtures of chlordane and DDT were sometimes used to give a formula useful for a wide variety of household pests. One operator commented he felt that using chlordane at higher concentrations than 3% was a waste of good material. Although the general preference was to use this material as either a dust or oil solution, several PCO's were using water emulsions with good effect. The type of application, of course, depended strictly upon the requirements of the job involved.

Chlordane has been used for a very wide range of insects with especially excellent results on ants, cockroaches. ticks, carpet beetles, and silver fish. Most of the PCO's indicated that chlordane has as wide a scope of effectiveness for the PCO's special problems as could be desired. Almost every operator contacted was using chlordane in his operations.

PCO's must of necessity be conservative in their use of new chemicals because of the contact which they and their products have with very many people. It is not unexpected therefore, that questions will arise in the minds of the operators from time to time about the toxic or dermatitic effects of such a chemical as chlordane. With a material of such potential value to the operators, however, the preliminary data on toxicity which have been developed to date have been sufficient to warrant the wide scale testing in practical use of chlordane. The dormant questions which have not been completely answered always rise to the fore-front when new rumors or whisperings of deleterious effects become known. Several of the PCO's commented that they had "heard of" dermatitic effects from chlordane. In order to determine whether or not there is any major cause for worry on the part of the PCO's, the following facts have been collected.

As reported by Dr. A. J. Lehman, Chief of the Division of Pharmacology of the Food and Drug Administration, in the results of toxicity tests made thus far with warm blooded animals on several insecticides, he gave the following table of estimated relative toxicity as compared to DDT with an arbitary value of one:

DDT	1
DDD	1/10
DMDT	1/24
Gamma Isomer of BHC	2
Other Isomers of BHC	½-¼
HETP	35
Chlordane	½
Toxaphene	4
TEP	125
Parathion	70

These values are for acute toxicity and have no bearing on the Chronic toxicity induced by repeated exposure.

It should be pointed out that chlordane is generally used in lower concentrations than DDT and that, therefore, the gross hazard is lowered further.

Dr. Lehman also reported some tests of dermal applications from which he concluded, "that benzene hexachloride, toxaphene, chlordane and phosphate compounds should be handled so as to avoid skin contamination.' In addition, Julius Hyman & Co. made an independent mail survey of thirty-five pests control companies scattered throughout the country. In the use of chlordane representing over a million man hours, which seems like more than an adequate trial, there were four definite cases of dermatitis and three cases of minor skin irritation. In all cases the men were using oil solutions of the compound, and the men involved were either allergic to petroleum solvents or particularly sensitive to a wide variety of chemicals. It is well known of course that oil alone will sometimes cause dermatitic effects on some people. This survey also included many of the manufacturers of agricultural insecticides who have processed tons of chlordane insecticides in their plants without any reported unusual reactions on the part of their operating personnel.

In the independent survey conducted on the West Coast, there was only one case of dermatitis reported. Examination of this man by competent dermatologists had indicated a sensitivity by "the patch test" to both petroleum solvents and the pure undiluted chlordane. The patch test consists simply of placing small quantities of the suspected chemical under a patch or bandage on the arm of the person being tested. Any rash or redness caused by this in a reasonable length of time is a positive reaction and indicates that the person is sensitive to the chemical. Since it was an oil solution which caused the skin rash originally, it is hard to blame either one or the other for this one case. In one other report of skin irritation it had been observed that the affected operator was also allergic to many other chemicals as well as chlordane solutions in oil. These data should be considered in light of the fact that individuals sometimes exhibit high sensitivity to relatively harmless and simple materials, so that it would be incorrect to conclude from a few isolated cases of dermatitis that the chemical was grossly harmful or unsafe to use.

The contributing factor in every one of the few cases reported which is of greater importance to consider is that an oil solution of chlordane was the culprit in every case and in none has the dermatitic effect been directly and definitely traced to the chlordane alone. It would be foolhardy to assume from the above comments that chlordane, or, for that matter, any other chemical used by pest control operators, is a completely harmless and innocuous chemical. No material is in that classification and chlordane may be involved in dermatitic reactions if it is not handled properly. It does appear, however, from the results of experiments and extensive field testing so far, that chlordane is probably no more hazardous to use than many other standard products used in the industry. The question of the proper handling of chlordane may then be rightly termed proper handling of *all materials* used in pest control operations.

An excellent summary of this subject is presented in a report from the office of Dermatology, Industrial Hygiene Division, U. S. Public Health Service, entitled "Occupational Dermatitis and Methods of Prevention" by Louis Schwartz and Paul C. Campbell, Jr. It is suggested that all PCO's avail themselves of this report since it gives, in excellent detail, methods for preventing dermatitis from any chemicals. Common procedures of cleanliness and good housekeeping are the prime factors in preventing industrial hazards of this type.

Summarizing, we have in chlordane an outstanding new implement for the PCO who should find ever increasing use for this versatile chemical. While it has not been field tested for the number of years of some of our standard materials, reports to date indicate that it can be used with comparative safety if normal cleanliness and good industrial practices are carried out. Many PCO's feel that chlordane will become a highly useful standard insecticide of the industry in a very short time, if it has not already become so.

Rats Invade Chicago's Beaches

Rats recorded a new high in audacity in Chicago this past summer when they invaded public bathing beaches along the lake front in broad daylight to snatch the crumbs dropped from picnic lunchbaskets. Report of the incident, which occurred in a better class north shore neighborhood, was made to a representative of PESTS by volunteer workers who staffed a booth at the Cook County Fair in Chicago, where the U.S. Public Health Service had erected a display dealing with the rat menace to public health. One worker there related, also, that a patient at the Cook County Hospital in Chicago, reported on her release, her experience with a rat which ran across her bed as she lay helpless in that great public institution.

Indignation is running high in Chicago, it was indicated during the conversation, because of the helpless, do-nothing attitude of city authorities. Somewhat over a year ago findings and recommendations of a health survey conducted at considerable expense by the federal Public Health Service, were made public.

In the lapsed time, however, nothing concrete has been done further than the appointment by each of the city's fifty aldermen of two persons in each ward to direct a rat exterminating program. Aside from their total lack of experience and training, any effort holders of these political plums make are hampered, it is said, by division of authority over Chicago's rat population among three municipal agencies, the department of health, department of public works and Bureau of Streets. Fearing possible "repercussions," it is charged, none of this trio of administrative agencies

(Continued on page 16)

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On the Scenting of Insecticides

Taken in part from The Givaudanian, September, 1948

THE VERY large quantities of insecticides sprayed into the household during a pest control service job make an adequate consideration of the scenting problem of utmost importance. The insect-killer is a product that permeates an entire room or home, and odor is not and cannot be a minor factor. The product will be smelled and there will be the most conscious consumer reaction to the smell. Odor is an important basis for consumer appeal and, in addition to the question of killing efficiency, odor is an important quality for the PCO to consider.

It is self-evident that the role of the perfume compound is of paramount importance because of the odoriferous kerosene that is utilized as solvent or vehicle for liquid insecticides.

Stressing the fact that some manufacturers of insecticides appear to be more concerned with economizing on their costs through the use of very low-grade kerosene as a vehicle, and through cheap and ineffective perfume oils, a recent NAIDM speaker said that these oils not only do not cover the odor of the carrier, but are in themselves unappealing to the consumer. What false economy it is to use ineffective perfume oils when, for a very slight additional cost and a more careful purchasing effort, a better odor can be obtained.

Odor Types

In choosing an odor for an insecticide, the primary factors are good coverage, and a character that will last as long as required without changing its nature and deteriorating from an olfactory point of view. No substitute for consumer testing, however, can be made by speaking in terms of desirable odor types. Actually the best "type" resists classification; it is pleasant but nondescript.

Proportions

The proportion of the perfume in the liquid insecticide, dependent as it is on the strength and tone of the perfume oil, and on the nature of the original odor of the carrier that must be covered, can nevertheless be placed within certain limits. The experience of the Givaudan laboratories, where perfumes have been incorporated in a wide variety of carriers, indicates that an average proportion of 0.1 to 0.25 per cent can be recommended, in very exceptional cases going beyond these limits to 0.05 on one hand, or 0.35 on the other.

Proper perfuming will go a long way toward satisfying the consumer who is buying a household pest control service.

Rats Invade Chicago Beaches

(from page 14)

has much heart for the exterminating job.

Soon after the Chicago-Cook County Health Survey was made public the city's Mayor Martin Kennelly created a Mayor's Committee on Rat Control, whose membership was drawn from outstanding civic and social leaders. Leading local pest control operators have at times been consulted but when asked what has been accomplished all P.C.O's. questioned agreed that it amounts to practical nothing. While not wantindicated that "political influence" has induced aldermen to by-pass ing to be quoted by name, several the local pest control industry and look outside Chicago for leadership in the city's rat extermination campaign.

"There are plenty of pest control people in Chicago capable of taking hold of this job and getting something done," said one leading operator. "We have a good law on the statute books and if it were enforced we could get ahead. It's prinicipally a matter of educating the people, but the instructors should not attempt to show children how to handle poison baits. They should confine their teaching to proper use of the garbage cans and the importance of clean alleys and leave the actual control work to the pest control people," he said.

Protect Trees From Damage by Rodents

Rabbits and mice seriously damage or kill many young trees every winter, says Jim Ferrell, extension forester at South Dakota State College.

Damage already has started in some areas and control measures should be started now, according to Ferrell.

If only a few trees need protection, they may be wrapped with burlap or other cloth wrappings. Material used this way should be well tied to the tree, wrapped around the trunk at least up to the lower branches.

Where a large number of trees need protection it is more practical to spray or paint the trees with a repellent. Poison, if used properly, can be helpful in preventing mouse and rabbit damage. Hunting and trapping will also help to protect the trees.

In many cases, a combination of these methods will be found to be most effective.

Repellent and poison and complete information on their use may be obtained from the U. S. Fish & Wildlife service, Mitchell, South Dakota, Ferrell points out.

New Monsanto Germicide

A new, powerful germicide, called "Santophen 1" and said to be free of the so-called "hospital-odor," is now being produced commercially by Monsanto Chemical Company, St. Louis, Mo. The product, a substituted phenol, is said to be effective against both fungi and bacteria and to be non-irritating in usage dilutions.

Described as a dry, non-dusting, flaked solid which can be formulated readily with commercial dispersing agents to give aqueous concentration with high phenol coefficients, Santophen is said to be nearly colorless and non-staining.

Insect Toxicant Compound 118

Rumors have been circulating about the new insect toxicant, Compound 118, discovered and recently introduced by Julius Hyman & Co., Denver, Colorado, but the first official word from the manufacturers has just been released.

In preliminary laboratory and field tests on a variety of test insects, it has been found to equal or exceed the insecticidal activity of the gamma isomer of benzene hexachloride at effective dosage levels. The compound is said to exhibit residual activity comparable to that of chlordane and does not show rapid paralytic action.

Compound 118 is NOT available at this time for PCOs because its toxicity to warm-blooded animals has not been fully determined. As soon as more definite information in regard to this problem is announced, the compound will be made available to PCOs for experimental use.

No common name for the formula has yet been designated. Its chemical formula is $C_{12}H_8Cl_6$; 1,2,-3,4,10,10-hexachloro-1:4,5:8-diendomethane -1,4,4a,5,8,8a - hexahydronaphthalene. It is a white crystalline solid melting at 100°-103° C. and is reported to be nearly odorless at room temperature, possessing a characteristic mild odor when warmed.

Much remains to be learned on the new compound's compatibility, but it reportedly appears to be compatible and safe to use with other insecticides and fungicides. Literature from the Hyman Company says preliminary laboratory tests show Compound 118 is effective for the control of the house fly, German roach, American roach, black carpet beetles, milk weed bug, squash bug, confused flower beetle, differential grasshopper (adults) and others. It appears to be slightly more volatile than chlordane; is said to exhibit marked vapor activity because of its greatly enhanced insect toxicity.

Mammalian toxicity is reported as follows: "Preliminary investigations indicate that single doses of 45 milligrams of Compound 118 per kilogram of body weight may represent the LD/50 of the material to white rats. Further studies of the acute and chronic toxicity of the compound are under way. Until further toxicological data indicates the contrary, precautions should be observed in handling so that vapors or dusts of this compound are not inhaled. Skin contacts should be avoided."

Until more toxicological data has been compiled and until more is known about durability of residues, Compound 118 is only available for experiment station research.

How to Make a Thallium Sulphate Solution

By JOSEPH R. GROSS

Checking with a cross section of operators, I found a number who have never used Thallium Sulphate in rat control. A number of others have used the pure material applied directly to baits. Still others have purchased ready-made proprietary solutions, pastes, jellies or seeds treated with Thallium Sulphate.

Using the pure chemical is both more expensive and more dangerous than is the use of solutions or pastes.

The question then is, how can a base solution be safely prepared by the average operator in the average work shop?

Here is a simple technique to make up a solution of about 3% in water. The method was generously passed to me by Mr. Harry Chandler of the Cleveland Exterminating Company many years ago. I have used it ever since.

A. Equipment Needed

1. Scales to weigh out 3.8 ounces of Thallium Sulphate
2. Spoon
3. Tea Kettle
4. Large dish pan
5. Funnel (preferably pyrex glass)
6. Gallon jug, small mouth, (sterilized with hot water)
7. Stove or electric heating unit
8. Dust mask, rubber gloves and apron

B. Materials Needed

1. Thallium Sulphate (the purer the better)
2. Corn syrup and/or cane sugar or syrup
3. Labels
4. Water supply

C. Procedure

1. Weigh out 3.8 ounces of Thallium Sulphate powder onto wax paper. (Wear mask, gloves and apron, and do the work where there is no wind or draft).
2. Measure out 4 ounces of syrup.
3. Place jug in dish pan of hot water. This prevents cracking when boiling hot water is poured in. (Funnel is in mouth of jug).
4. Slide Thallium powder slowly into funnel and at the same time flush it into the jug with hot water from the kettle.
5. Do the same with the corn syrup.
6. Add more boiling hot water to bring total to full gallon.
7. Stopper the jug and shake to help dissolve the mixture.
8. Label the jug properly and store in a safe place.
9. Wash all utensils, gloves, etc., so that no traces of the poison are left. This should include floor, table, scales, as well as the utensils and the jug itself. Newspaper spreading on the table and floor is a good precaution. They can be burned after the solution is made.
10. Pure glycerine may be added to the solution as an antifreeze. Anti-ferments may also be added.

Thallium Sulphate dissolves better in hot water than in cold. Temperature of boiling water does not release dangerous quantities of poison fumes. In this method, the water temperature is just under boiling as it mixes with the Thallium. Also the funnel in the small mouth jug tends to stop what little vapor there is produced. Thallium solutions or pastes are usually kept in glass since the chemical corrodes most metals.

Thallium is extremely poisonous. Even minute quantities are dangerous because the human body does not eliminate it. Such minute quantities breathed in or absorbed through the skin may accumulate over a period of years until a toxic dose is reached. In this respect, Thallium poisoning is similar to lead poisoning in "painters' disease."

Always wear rubber gloves when using Thallium.

Regional Conferences Scheduled for PCOs

During Late January and Early February

Ninth Southern PCO Conference

Louisiana State University, Baton Rouge, Louisiana

JANUARY 27, 28 and 29, 1949

Ectoparasites, termites and mice will be the important subjects discussed at the Ninth Annual Southern Pest Control Conference to be held at Louisiana State University, January 27, 28 and 29, 1949. Everyone interested in pest control work is invited to attend and should register early for the conference.

Requests for reservations for rooms should be made directly to the following hotels: Heidelberg, King and Istrouma, all of Baton Rouge, La. For further information write directly to Professor O. W. Rosewall, Dept. of Zoology and Entomology, Louisiana State University, Baton Rouge 3, La..

The program is scheduled to run as follows:

FIRST DAY

Thursday, January 27, 1949

8:00 A.M. Registration, Room 102, Audubon Hall

Schedule of Meetings

Place: John M. Parker Auditorium

Presiding: Prof. O. W. Rosewall

9:00 Introduction: Henry V. Howe, Dean, College of Arts and Sciences.
Welcome: Harold W. Stoke, President, Louisiana State University.
Response: C. A. Timbos, Regional Vice-President, National Pest Control Association.
Safety for the Pest Control Operator ..... J. W. Meehan, Jr.
Movie: "The Air We Breathe"
J. W. Meehan, Jr. in charge
Fumigation Problems
G. H. Chapman
Louisiana Requirements for Termite Control Work, W. E. Anderson
Status of Termite Control Work in the South .... Wm. O. Buettner
11:30 Luncheon: Arranged by L. S. Bridges

TERMITES

Presiding: H. O. Abel

12:45 P.M.
Requirements of a Good Inspection Job ..... W. B. Hill
Comments ... J. Harvey Sturgeon
Recommendations for Control Work
J. L. Howell
Comments ..... Robert Couhig
A Building Code As An Aid to PCOs ..... Alfred Zimmern
(Agreements & Termite Maintenance Service)
Comments ..... R. P. Turnley
A Summary of Termite Control Problems .... Wm. O. Buettner

STATE CAPITOL

Presiding: Wm. O. Buettner

7:30 P.M.
Problems of Ant Control
C. A. Trimbos
Comments ..... C. R. Blair
New Developments in "1080"
Leader: H. Fellton

SECOND DAY

Friday, January 28, 1949

ECTOPARASITES

Presiding: Herman L. Fellton.

Participating. Ralph C. Barnes, Carl O. Mohr

9:00 Fleas — Biology and Control Mohr
9:30 Flea Control Discussion, Fellton
9:45 Ticks — Biology and Control Barnes
10:10 Recess
10:20 Film: "Life History of Rocky Mountain Tick"
10:40 Tick Control Discussion, Fellton
10:50 Mites — Biology and Control Mohr
11:15 Mite Control Discussion, Fellton
11:30 Luncheon: Arranged by L. S. Bridges
12:45 Lice — Biology and Importance Barnes
1:00 Film Strip
1:10 Control of Lice ..... Fellton
1:20 Biology and Control of Bedbugs, Scorpions, Spiders, and Centipedes ..... Mohr
1:50 Mosquitoes — Biology and Control ..... Barnes
2:10 Film: "The Mosquito"
2:20 Mosquito Control Discussion Fellton
2:30 Recess
2:45 Domestic Flies and Their Control ..... Barnes
3:15 Film: "Goodby Fly"
3:25 Fly Control Discussion, Fellton
3:35 Biology of Sandflies, Deerflies, Blackflies, Gnats, etc. .... Mohr
3:45 Control of Sandflies, Deerflies, Blackflies, Gnats, etc .. Fellton
7:30 Banquet: Heidelberg Hotel — Toastmaster: Theodore Oser
(Ladies invited)

THIRD DAY

Saturday, January 29, 1949

Presiding: G. H. Burnett

9:00 A.M.
Control of Mice, J. Harvey Sturgeon
Wetting Agents ..... C. E. Smith
Mixtures, Emulsions, Formulations
E. H. Floyd and L. D. Newsom
Mothproofing: A Demonstration
Robert Couhig
Demonstrations of Fly Control
J. C. Redd
Demonstrations of Pest Control Machinery and New Apparatus Used in Pest Control Work.
In charge: H. L. Belle
11:45 A.M. Adjournment

Ninth Eastern PCOs Conference

University of Massachusetts, Amherst, Mass.

JANUARY 31, FEBRUARY 1 and 2, 1949

The Ninth Annual Eastern Pest Control Operators' Conference will be held at the University of Massachusetts, Amherst, Mass., on Monday, Tuesday and Wednesday, January 31, February 1 and 2, 1949. Featured in this year's program will be discussions on the "bug of the year," Ectoparasites; the 1949 version of "Taking Down Our Hair;" and Sanitation. The conference is sponsored by the University of Massachusetts in cooperation with the National Pest Control Association.

Every person planning to attend this conference is expected to make his own room reservations by writing direct to the following hotels: The Lord Jeffrey, and Drake, both in Amherst, and the Northampton in Northampton, Mass. Doubling up wherever possible is being recommended and there are no rooms available in private homes. A. A. Therrien, Fernald Hall, University of Mass., Amherst, is chairman of the Housing Committee and will render assistance if needed.

Registration fee for the conference is $12.50 and should be sent directly to F. E. Bohman, P. O. Box 65, Hartford 1, Conn. Further inquiries can be made at the National Pest Control Ass'n office, 3019 Fort Hamilton Parkway, Brooklyn 18, New York.

Program for the three-day meeting is as follows:

Sunday, January 30, 1949
Lord Jeffrey Inn

Advance registration — 7:30-9 P.M.

Monday, January 31, 1949
Fernald Hall
Four Concurrent Sessions

Co-Chairmen: I. B. Carncross, Sidney Wimmer

8:30 A.M. The entire Conference Group will meet in the Lecture Room of Fernald Hall and divide into four groups. The sub-divided groups in rotation will participate in the clinics based on time schedules indicated:
(A) 8:30 A.M. to 10:15 A.M.
(B) 10:30 A.M. to 12:15 P.M.

(12:30 P.M. Conference Photograph —Stockbridge Hall Steps and Luncheon at Dining Hall)
(C) 1:45 P.M. to 3:30 P.M.
(D) 3:45 P.M. to 5:30 P.M.

NOTE: Definite meeting rooms to be announced:

Clinic No. 1 — **Toxicities**
Dr. James C. Munch, Chairman
Charles N. Eagen
Mark Weintraub

Clinic No. 2 — **Formulations**
F. S. Kirkpatrick, Chairman.
Leonard Goldman
R. O. Hartley
W. E. McCauley
I. H. Luttan

Clinic No. 3 — **Damages**
Jacques J. Hess, Chairman
Charles W. Houghton
David A. Weisburger
Chester Schwimmer

Clinic No. 4 — **Equipment**
Edward Maguire, Chairman
John K. Medoff
Robert Fox
Philip Mayer, Jr.

NOTE: These clinics have purposely been arranged so as to make for smaller groups and more active discussion. It is urged that any having problems or questions that might be discussed by the above clinics submit these to Professor Arthur I. Bourne, University of Massachusetts, Amherst, Mass.

Evening Program
Fernald Hall
Abe Charnack, Presiding

1949 Version of Taking Down Our Hair, general discussion.

Tuesday, February 1, 1949
Fernald Hall
Laboratory Sessions
Dr. C. P. Alexander, Presiding

9:30 to 11:30 A.M. - 1:30 to 3:30 P.M. Laboratory Sessions on Ectoparasites Conducted by Departmental Staff
(The Conference will be divided into two sections. Those assigned to each morning section will attend the alternate section in the afternoon).

Section A — **Ticks and Mites** — Structure and Classification
Section B — **Fleas, Lice and Bedbugs** — Structure and Classification

3:30 P.M. General Summary
"Importance of Ectoparasites In Transmission of Disease," Dr. J. Bequaret.
Panel Discussion — "Control of Ectoparasites," Charles Pomerantz, Leader. Sheldon Lang, Arthur Brody and Kenneth Tompkins.

Open Forum Discussion will follow brief presentations:

1. Ectoparasites — Where to Look for Them.
2. Ectoparasites — What Materials To Use for Their Control.
3. Ectoparasites — Where and How the Treatment Should Be Applied

Evening Program
Lord Jeffrey Inn

7:00 P.M. **Annual Banquet**
Toastmaster ..... F. E. Bohman
The NPCA ..... I. B. Carncross
Guest Speaker .... Dr. R. A. Van Meter, President, University of Massachusetts

Wednesday, February 2, 1949
Fernald Hall
Sanitation
George R. Elliott, Presiding

9:00 A.M. It is expected that several representatives from other trade groups and food processors will participate in an Open Forum. Sanitation encompasses "Better Methods; Better Living."
Here is the situation in the country. The need for sanitation has increased as the environment and the living habits of the people have evolved. Anyone who reviews the happenings of only the last ten years, for example, in food distribution and service is startled at the changes that have taken place. New devices and new methods have followed one another in a constant stream and the stream shows no signs of diminishing its flow. These are marks of the productive ingenuity of the country.

Pacific Coast PCO Conference

Palace Hotel, San Francisco, California

JANUARY 31, FEBRUARY 1, 2, 1949

The conference committee of the University of California and that of the Pest Control Operators of California, Inc., decided to pool resources in a different way from the usual PCO convention. This year the university faculty will be guests of the operators at their annual convention to be held at the Palace Hotel in San Francisco, January 31 and February 1 and 2, 1949.

The first day will be devoted to new developments in insecticides and control measures, control of vectors of disease, industrial relations and to legislation. The second day's program will consist of discussion of resistant insects and special problems of pest control men and termite operators. The newly presented Minimum Standards for Termite Control of the Los Angeles district will be discussed. On February 2, a business session will be held. The annual banquet Wednesday evening will close the conference.

One of the features planned is a contest with prizes for the best gadgets displayed by operators. It is expected that several ingenious inventions and discoveries will show up.

Thirteenth Purdue PCO Conference

Purdue University, Lafayette, Indiana

FEBRUARY 7-11, 1949

The 13th Annual P.C.O. Conference at Purdue University is scheduled for February 7-11, 1949.

Although the roster of speakers has not been completed, many outstanding representatives from industry and research have already been scheduled. These include federal and state authorities, members of the pest control industry, and representatives of insecticide and equipment companies, as well as food industries. Those wishing a complete program as soon as available can write J. J. Davis, Purdue University, Lafayette, Indiana.

It is highly important that hotel accommodations be made as quickly as possible. Write directly to any of the following: Purdue Union, West Lafayette, Ind.; Fowler Hotel, Lafayette, Ind.; and Lahr Hotel, Lafayette, Ind. Registration fee for the week-conference will be $12.50.

The program outline is as follows:

Sunday, Feb. 6, 4:00-6:00 P. M.
Advance registration in the Purdue Memorial Union.

Monday, Feb. 7, A.M. — Fundamentals of Insect Life and Insect Control.

Monday, Feb. 7, P.M. — (a) Biology and identification of Rodents.
(b) Identification of Insects.
These will be given concurrently, with two sessions of each during the afternoon.

(Monday's program is intended primarily for those who have not previously attended the Conference.)

Monday night, Feb. 7—The evening is open for special group meetings..

There will be a Big Nine basketball game in the Field-house, Monday evening, between Iowa and Purdue, for those interested.

Tuesday, Feb. 8, A.M. — "Bug of the Year — Ectoparasites"

This session will include the different types of external parasites of man and animals, including recognition, biology, economic importance and control, and will be conducted by specialists, including entomologists, biologists, and PCOs.

Tuesday, Feb. 8, P.M. — Termite Control.

This major problem will be handled by experts and will include a discussion of the work being done by the N.P.C.A. Termite Committee.

Tuesday night, Feb. 8 — Termites and Other Wood-Infesting Insects.

Wednesday, Feb. 9, A.M. — Fly Control.

The problem of fly and mosquito control, which has developed into a major problem of the pest control operator, will be given adequate consideration by research men as well as by operators who have had experience in fly control, including directors of city-wide control campaigns.

Wednesday, Feb. 9, P.M. — Rats and Mice

All of the new developments in rodent prevention and control will be thoroughly discussed and demonstrated by federal and state authorities, as well as by members of the industry.

Wednesday night, Feb. 9 — Roaches and Other Problems will be discussed. This should develop into a good bull session.

Thursday, Feb. 10, A.M. — Insecticides

New and old insecticides, their formulations, industry uses, toxicity, and application methods.

Thursday Noon — Group Picture.

Thursday, Feb. 10, P.M. — Food Industry Problems.

The food industry represents a major and new potential field for pest control operators. Arrangements have been made for representatives from the major food industries to participate.

Thursday night, Feb. 10 — Banquet. A treat in store.

Friday, Feb. 11, A.M. — Demonstrations

Arrangements are being made to demonstrate types of equipment and methods of application.

Seventh Canadian PCO Conference

University of Montreal, Montreal, Canada

FEBRUARY 13-17, 1949

Including Annual Business Meeting of the Canadian Pest Control Operators Association, Windsor Hotel

The Seventh Annual Canadian Pest Control Operators' Conference combined with the Annual Business Meeting of the Canadian Pest Control Operators Ass'n will be held in Montreal, Canada, February 13, 14, 15, 16 and 17, 1949. Meetings will be held at both the University of Montreal, 2900 Mt. Royal Blvd., and at the Windsor Hotel, Dominion Square.

Hotel reservations should be made by writing directly to the following hotels: The Windsor, Dominion Square; The Mount Royal, Peel Street; De laSalle, 1240 Drummond St.; and The Laurentien, all in Montreal.

Following is the announced program for this annual conference:

Sunday, February 13, 1949
Windsor Hotel

3:00-7:00 P.M. Advance Registration —Salon "E"

7:00 P.M. "Priming" Dinner — (To give all who have already arrived an opportunity of getting together)

8:30 P.M. Board of Directors' Meeting, Canadian P.C.O.'s Association.

Monday, February 14, 1949
University of Montreal

8:30 A.M. Hall of Honor (Main Entrance) Registration

9:30 A.M. **Morning Program — Lecture Room H-404**

Insect Structures . Prof. A. Robert

Insect Development and Fundamental Physiology .... Prof. O. Fournier

Principles of Pest Control Prof. E. R. Bellemare

Questions and Answers

12:30 P.M. Short Business Session Canadian P.C.O.'s Association: Appointment of Special Committees

1:00 P. M. Lunch — University Cafeteria

1:45 P.M. Visit of some of the Laboratories and other interesting points of the University building.

2:30 P.M. **Afternoon Program — Lecture Room H-404**

(A) New Chemicals and Formulations

Symposium — Leader: Dr. C. R. Twinn

Short talks by Manufacturers' Representatives followed by general discussion.

(B) New Equipment

Manufacturers' Representatives invited to display their respective pieces of equipment and to explain their features.

General Discussion

8:00 P.M. **Salon "E," Windsor Hotel**

Reception for Guests, Members and the Ladies

Tuesday, February 15, 1949
University of Montreal

9:30 A.M. **Morning Program — Lecture Room H-404**

"Pests of the year" Session: **Ectoparisites**

(A) Parasitic Mites

(B) Biting Lice — Sucking Lice

(C) Fleas

I—Morphology and Classification Prof. O. Fournier

Examination of specimens

II—Biology and Life Habits Dr. F. O. Morrison

III—Control methods Dr. C. R. Twinn, (tentative)

IV—Quiz on Ectoparasites and their Control

12:30 P.M. Conference Photo

1:00 P.M. Lunch — University Cafeteria

2:30 P.M. **Afternoon Program — Lecture Room H-404**

"Ants and their Control"

I—External Structures and Classification .... Prof. A. Robert

II—Biology and Life Habits Miss Louise Brunelle

III—Control Methods Prof. E. R. Bellemare

Questions and Answers

(The evening of this day is being left open for special subjects which might crop up between now and the Conference date)

Wednesday, February 16, 1949
University of Montreal

9:30 A.M. **Morning Program**

I—Fly Control Symposium

(A) Fly "Resistance" to chemicals ..... H. A. U. Monro

(B) Fly Control Failures: a resistance of what to which? Prof. E. R. Bellemare

Quiz on Fly Control

II—Rodent Control "Today" (with special refernce to the newest rodenticides) Speaker to be announced

1:00 P.M. Lunch — University Cafeteria

2:30 P.M. **Afternoon Program**

(A) Answers to Quiz on Ectoparasites and their Control

(B) Answers to Quiz on Fly Control

(C) Answers to questions submitted by members on special forms distributed at the opening to the Conference.

Round-Table Discussion — Panel Composed of the Conference Faculty Members

7:00 P.M. **Windsor Hotel — Annual Banquet of the CPCOA**

Guest Speaker: Dr. H. G. Crawford, Dominion Entomologist

Chairman: Charles Riess, President of the Association.

Thursday, February 17, 1949
Windsor Hotel

9:30 A.M. **Salon "E"**

Annual Business Session

Canadian Pest Control Operators Association

Reports of Officers and Committees

Election of new Board of Directors for 1949-1950

Says Roaches Disease Carriers

Dr. O. B. Williams, bacteriology professor, University of Texas, reported recently that research by himself and Miss Ruth Bitter, recent university graduate, showed that cockroaches are carriers of organisms that cause intestinal disturbances in human beings.

"These insects have been regarded with tolerance by a large proportion of the population because of the lack of conclusive evidence that they can transmit diseases," he said.

"Our studies show that such tolerance is unwarranted and that every effort should be made to suppress the cockroach and protect food and kitchen utensils from contact with its feces." Roaches were found to carry intestinal diseases which are types of dysentary, paratyphoid fever, and food poisoning, Dr. Williams stated.

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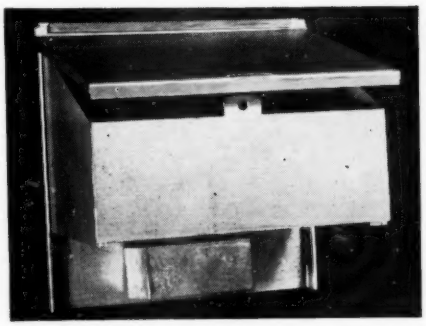

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Plane Pests Present New Quarantine Problem

Captain Calvin B. Spencer, a United States Public Health Service doctor and chief quarantine officer for the Port of New York said recently the service must maintain quarantine inspection parties at LaGuardia Field and the new New York International Airport at Idlewild and also be prepared to dispatch experts in a hurry to any field in the New England area that a transatlantic airliner might be forced to use in an emergency.

"The incubation periods of the most dangerous contagious diseases are so long that in a flight duration of only a few hours an infected person may not have had time to develop the customary symptoms by which the infection would usually be detected," he said.

A person might be exposed to infection in an epidemic area abroad, board a transatlantic plane, clear quarantine inspections in this country and then proceed about his business for several days before the diseased condition was obvious, Captain Spencer explained.

Five major infectious risks and their periods of incubation he listed as follows:

Plague, 6 days; cholera, 5 days; yellow fever, 6 days; louse-borne typhus, 12 days; and smallpox, 14 days.

Since "suitable" means of protection against all contagious diseases have been developed, and the protection afforded by vaccination varies from three months for cholera to much longer periods for the other infections, those who plan to travel should be immunized, Captain Spencer pointed out, some time before they begin other preparations.

The inspectors are unarmed and when necessary call on the Coast Guard for assistance in enforcing rigid health regulations. Spencer said he had to do this recently dealing with the Russian Consulate when the captain of the Russian steamship Pobeda refused to have his ship fumigated before entering the port to kill rats that might have been disease-laden.

PATENTS
RELATING TO PEST CONTROL

BY

DR. R. C. ROARK
U. S. Department of Agriculture

2,442, 760 (June 8, 1948; appl. July 9, 1945). DICHLORODIPHENYLTRICHLOROETHANE AND CYCLOHEXYLDIPHENYLETHER INSECTICIDAL COMPOSITION. Curtis E. Dieter and Bernard J. Thiegs, Midland, Mich. — The Dow Chemical Company, Midland, Mich. — An insecticidal composition includes as active toxicants a 1, 1-di-(chlorophenyl) -2, 2, 2-trichloroethane and monocyclohexyl-diphenylether.

2,446,743 (Aug. 10, 1948; appl. June 12, 1945). SCREENED STORM SASH. Latta O. Davis, Greenfield, Ind.

2,447,359 (Aug. 17, 1948; appl. Dec. 1, 1944). PRODUCTION OF SODIUM FLUOSILICATE. Llewellyn Cardiff Oakley, Jr., Tampa, Fla. — Tennessee Corportion, New York, N. Y.

2,447,475 (Aug. 17, 1948; appl. Nov. 29, 1945). EMULSIFIABLE OILS. Russell A. Kaberg, St. Louis, and John Sterling Harris, Richmond Heights, Mo. — Monsanto Chemical Company, St. Louis, Mo. — A self-dispersing concentrate for forming stable oil-in-water emulsions comprises an aromatic oil; an insecticide; from 3 to 10% by weight of an oil-soluble organic surface-active agent which is a neutral salt and which is selected from the group consisting of sulfonates and sulfates and having a Draves wetting time of less than 10.5 seconds in an aqueous solution consisting of 0.5% by weight of said surface-active agent; and from 3 to 10% by weight of the condensation product of 1 mole of C_4-C_{18}-alkyl-substituted hydroxy compound of the benzene series and from 8 to 25 moles of ethylene oxide.

2,447,504 (Aug. 24, 1948; appl. Dec. 7, 1945). FLUORODINITROETHANES. Henry B. Hass, West Lafayette, Ind., and Arthur Charles Witaker, Oakmont, Pa. — Purdue Research Foundation, West Lafayette, Ind. — These compounds have toxic and lachrymatory qualities, which make them especially adaptable to insecticidal purposes.

2,448,159 (Aug. 31, 1948; appl. Aug. 2, 1944). SPRAY GUN. Warren M. Spreng, Ashland, Ohio. — The F. E. Myers & Bros. Company, Ashland, Ohio.

2,448,265 (Aug. 31, 1948; appl. Dec. 22, 1945). PROTECTION OF CROPS BY SOIL FUMIGATION. John Franklin Kagy and Robert R. McPherson, Long Beach, Calif. — The Dow Chemical Company, Midland, Mich. — A method for protecting the underground parts of crops against attack by soil-inhabiting invertebrates includes the step of depositing ethylene bromide at from 2 to 7 inches below soil surfaces at a dosage of from 10 to 120 pounds per acre.

2,448,418 (Aug. 31, 1948; appl. Oct. 12, 1944). CHEMICAL GUN TRAP. Harold Edwin Cootes, Detroit, Mich., and Hershey Roy Graybill, Manheim, Pa. — Animal Trap Company of America, Lititz, Pa. — The present invention relates to traps for destroying coyotes and wolves by explosively discharging poison or other chemicals into the mouth of an animal springing the trap.

2,448,665 (Sept. 7, 1948; appl. June 22, 1945). LOW-TEMPERATURE NONCRYSTALLIZING DDT-ALKYLATED NAPHTHALENE INSECTICIDE. Elmer E. Fleck, Silver Spring, and Robert K. Preston, Cumberland, Md. — People in the territory of the United States. — An insecticidal composition which will remain free from crystal formation of DDT at all temperatures between about -20° F. and 140° F. comprises a solution of about from 95 to 80 parts, by weight, of a kerosene mixture of DDT and about from 5 to 20 parts, by weight, of substantially pure alkylated naphthalenes, said kerosene mixture containing about from 3 to 10 per cent DDT.

2,448,910 (Sept. 7, 1948; appl. March 27, 1944). CHLORINATED PARAFFIN WAX AMINES FOR CONTROLLING FUNGI AND BACTERIA. Thomas E. Reamer, Albany, Calif. —Shell Development Company, San Francisco, Calif. — A method of controlling fungi and bacteria comprises exposing them to mixtures of aliphatic compounds having at least 12 carbon atoms and not more than about 40 carbon atoms and containing per average molecule more than one Amino group, at least one olefinic double bond, combined chlorine only in the form of 0.5 to 1.5 non-ionizable chlorine atoms, and an oleophilic hydrocarbon chain of at least 8 carbon atoms linked in an amino group.

2,449,028 (Sept. 7, 1948; appl. Jan. 18, 1946). PROCESS OF COMMINUTING IMPURE DDT. Isaac F. Walker, Hockessin, Del. — E. I. du Pont de Nemours & Company, Wilmington, Del. — A process comprises comminuting in a high velocity gas disintegrator impure DDT having a setting point of from 102° to 106° C. in the presence of a salt of an acid having an ionization constant of at least 3 x 10^{-7} at 25° C.

2,449,088 (Sept. 14, 1948; appl. July 23, 1945). OCTA-CHLORO-BIPHENYL QUINONE. Franklin D. Smith, Webster Groves, Mo. — Monsanto Chemical Co., St. Louis, Mo. — Octachlorobiphenyl quinone is claimed as a new product. Octa-chlorobiphenyl quinone is adapted for use as an insecticide, fungicide, and herbicide.

2,450,345 (Sept. 28, 1948; appl. Nov. 18, 1944). PROTECTIVE CAP FOR WOOD POSTS, POLES, AND THE LIKE. William Martin Kervin, Montreal, Quebec, Canada.

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COMMENTS by the Editor

The Conferences and You

INDUSTRYWISE, THE MOST important period on the current calendar is the time set aside for the sectional pest control operators' conferences to be held late this month and early in February. Without giving you the old song and dance about the educational importance of these meetings, merely because you're tired of hearing that phraseology, we urge you to attend for your own business sake.

The "bug of the year", Ectoparasites, is featured on each of the programs sponsored by the Eastern, Pacific Coast, Purdue, Canadian, and Southern PCO conferences, because this is the year our industry is specializing in the study of these disease vectors. Conspicuous by its presence on each schedule of subjects is "sanitation." Now, we're talking! Pest control is a professional part of sanitation and there's plenty of room for more business as PCOs include a greater number of sanitation services in their work. Industry speakers will lead many of these discussions to present the need for sanitation in their own lines of business. Opportunity knocks for the wide-awake at these conferences. Open the door, and listen to what it has to say.

One big stumbling block at each of these meetings is the inadequate participation of the audience with questions, comments, and discussions from the floor. The most important thing to you at the conference is *the question in your mind;* that is probably far more important than anything the speakers can bring you. So go armed with your problems and share your experiences in the open discussions. Teamwork solves the problem more quickly than trying to fight the battle alone.

If you haven't already planned to go to the conference nearest you, do so now. You'll come back to your work refreshed; with a new approach that may well mean extra bucks in your pocket.

Support Sanitation Research

THE NATIONAL SANITATION Foundation, founded in 1944, held its first "Clinic" in Ann Arbor, Michigan last summer and members of the pest control industry were invited to participate in the program. The purpose of this Clinic was to afford a common meeting ground where industry and public health officials could discuss and solve common problems relating to sanitation. The value of PCO cooperation in such a project was quickly realized, consequently the NPCA decided at the Toronto convention to become one of NSF's sponsors by contributing $250 to its program. By working more closely with other industry and public health officials interested in sanitation, the pest control industry can help effect a better understanding of some of the problems involved. We shall look forward to hearing more about the work of the National Sanitation Foundation.

The Responsibility of Freedom

THE AGRICULTURAL INSECTICIDE and Fungicide Association is distributing a statement, part of which we quote directly because we whole heartedly agree with the message it carries. It says:

"The discovery, development and rapid introduction of numerous organic pesticides during and since the war years represents an outstanding advance in the science of pest control.

"New problems have been created by the use of new organic pesticides. Questions stemming from these problems are numerous and complex. Answers to many of them have already been developed and those still unsolved are the subject of intensive research by industry and agencies of Federal and State governments.

"Some of the press coverage, including newspapers, popular magazines, professional and technical journals, represents service of high value in that special emphasis has been placed on the necessity for the competent selection, handling and application of new pesticides. Too much of the recent press treatment, however, has emphasized the problems almost to the exclusion of the tremendous benefits of pest control. It has in some instances conveyed the impression that a given pesticide is too dangerous to use by anyone under any circumstances.

"Some confusion was to be expected and it will continue until the public is educated to accept the new materials for what they are and do. Cooperation of government, the pesticide industry, allied industries and the press is necessary to bring about such a solution.

"Legislation is frequently proposed as the solution to the problem. Legislation alone is not the answer. Some additional regulations based on a sound need may be desirable, but many problems of this kind are entirely avoided if the user is properly informed and others can be solved by research and education.

"In the final analysis, the user has the freedom of choice of the materials he uses, and no one wants it otherwise. But freedom brings responsibilities to both the manufacturer and the user and unless both accept these responsibilities, hazards will continue to plague all who have reason to be interested in effective pest control — and that means the public generally."

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(including DDT-resistant strain)

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ANTS

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TRADEMARKS REG. U. S. PAT. OFFICE

Letters

TO THE EDITOR

FLYING RAT CAUSES QUARANTINE STIR

Gnawed Bag in Luxury Liner Held Evidence That European Rodent Used the Plane

DISEASES ALSO GO BY AIR

Speed of Travel Makes Five Infections Serious Menace, Health Official Warns

By ROBERT PLUMB

The recent discovery that at least one European rat has crossed the ocean while surreptitiously enjoying a meal aloft in the luxurious cabin of a transatlantic airliner has posed a new problem for doctors at the United States Quarantine Station here.

The rodent, while en route, chewed up a paper bagful of powdered chocolate-flavored milk that an international traveler had unaccountably brought along, he said. The rat was never seen at La Guardia and may have left the plane at an intermediate stop, Captain Spencer believes.

You may be interested in the enclosed news item which appeared in the New York Times on November 27th.

You may be further interested to know that our organization was called upon to trap this rodent as soon as the plane arrived from Europe. Despite the statement in the press that "the rodent was never seen at LaGuardia and may have left the plane at an intermediate stop," the fact remains that we trapped a full grown female Norwegian rat.

While the plane was en route to the United States it had chewed a passenger's baggage and fed upon powdered milk as well as a ham sandwich belonging to the flight engineer. We would have preferred to fumigate the plan with HCN but circumstances prevented, so we then decided to use a portion of the ham sandwich as bait and within a short while captured the culprit.

PCOs may find the airlines in their respective locations a new source of business for both vermin and rodent control and we are quite proud of figuring in the first reported instance of this kind.

J. J. Hess
Exterminating Services Corp.
New York City

Tribute

For the past 12 months now, we have enjoyed the advantageous reading contained in your journal, and wish to congratulate your management for the helpful suggestions contained within its pages from month to month, and also for the advertising which has so helped the progress of our firm's "up to the minute" advancement in this country.

It might be mentioned that as a result of the advertisements of various chemical corporations and companies, we have been able to maintain intimate contact with the latest developments in the chemical warfare against pests.

We have noted that you are working in cooperation with the "National Pest Control Association," and we were wondering if it would be of any advantage to us in Australia, to apply for membership in this association per medium of your philanthropic help.

Once again, we advance thanks for help received from you.

Yours faithfully,

THORLEY'S PEST-RID CO.

H. D. Thorley
Lismore, N. S. W.
Australia

The many advantages in belonging to the NPCA were told this Australian PCO in our reply to him, but we thought our readers would enjoy reading this tribute to American business and its advertising. Trade advertising is most effective when informative.

Little Known FACTS

Relating to Pest Control

By J. R. Gross

Control of Dog Ticks

Rocky Mountain spotted fever is reported to be increasing in Eastern United States. It is carried by the American dog tick, also called the Eastern wood tick.

PCOs can be of value to communities where the tick populations are high. Even as a nuisance ticks are a real problem; but when they carry a deadly disease, control becomes of top importance.

Seems to me that we should make a point of finding out where in our communities there have been cases of spotted fever. We should also try to find out where the ticks are heavy. High populations of ticks and danger of disease go together. In fact, authorities feel that there is almost no danger until the tick populations reach a definite high level.

Very conveniently, ticks themselves make it simple for the average PCO to control even large areas without investment in big equipment.

About 80 to 90 per cent of the ticks in an area will be found concentrated along the edges of paths, roads and animal trails. There they hang on to grass, weeds or brush waiting for an animal, two-legged or four, to furnish warm, red blood.

With an ordinary back pack sprayer or bellows duster of DDT, a man can go up and down the roads and trails treating four to five feet on each side. This way, by treating one to two per cent of the area, he can be fairly sure he is killing off close to 90% of the ticks.

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Makes Termite and
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THE ONLY TYPE SPRAYER WHERE
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Teejet nozzle — brass or aluminum ..... $1.20 each
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PCE hose is oil resistant inside and out, flexible, strong, lightweight. Bursting pressure 1600 lbs., working pressure 250 lbs. Lasts for years — and costs less. ¼ inch I.D., available in any lengths, with or without fittings.

Priced at only ..... $.33 per foot

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PCE extensions are aluminum . . . lightest, strongest, and long lasting. They are threaded on both ends and fitted for easy nozzle handling.

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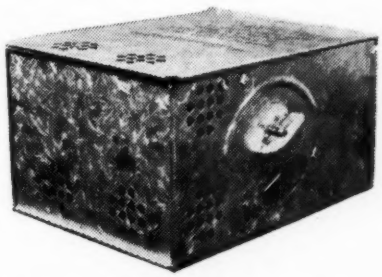

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Makes your service work quicker, easier, and sells on sight in your store. Retail Price $4.50 each. Special PCO Trade Price $32.00 Dozen, prepaid, insured. Send order today.

Ketch-All World's Finest Mouse Trap
ALBIA PRODUCTS CO.
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Why PCOs Should Be Familiar with Ectoparasites

A Guest Editorial by

Frank Shaw

Department of Entomology and Zoology

University of Massachusetts

THERE ARE AMPLE reasons for the PCO to be familiar with ectoparasites. Aside from the nuisance due to their bites and presence, many actually serve to transmit disease producing organisms of man. Thus fleas are involved in the transmission of plague, mites in the transmission of rickettsial pox and mite typhus, lice in the transmission of typhus and ticks in a variety of diseases including tularemia and Rocky Mountain Spotted Fever.

Not only should the PCO be aware of the personal risks involved when eliminating such pests or their rodent hosts but also, he should be aware of the serious possibilities of disease outbreak if the right combination of arthropod vector and diseased animal be present. While the Public Health Service is the first line of defense against the outbreaks, the role of the PCO who is actually controlling both disease vectors as well as hosts all the time is of great importance to the health of America.

The difficulties of study of ectoparasites are many. It is admitted that these groups require the service of specialists for correct identification. The point may be raised then — how can the PCO function in reducing the hazards of ectoparasites aside from direct control. I would indicate the following ways.

1. The PCO is in very close contact with both the rodent hosts and the ectoparasites. He can be trained to recognize the presence of ectoparasites and can in many cases learn to recognize which groups of the ectoparasites are especially dangerous. Where doubt exists, the PCO can send specimens to investigators who can make positive identifications.

2. The PCO through his close association with pests has a responsibility toward man which may be equivalent to that of a physician. We all are familiar with reports of skin irritations of obscure origin. I know of one instance where a patient after consulting a skin specialist to obtain relief from intense itching, was advised to see a psychiatrist. Further investigation revealed the presence of small mites. The patient was then able to obtain relief and still more important her doubts of her own sanity were removed.

3. Especially in areas where rodents serve as hosts and arthropods as vectors of diseases of man, the PCO may have the responsibility of controlling rodent hosts without allowing the ectoparasites to transfer to man thus initiating an outbreak of disease. This is a distinct possibility and one which should cause the PCO to realize his importance as one of the bulwarks of the defense of the health of the nation.

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Effective January 1st, 1949, the price of Lucide A-20 is again lowered; price decreases in Chlordane and increased production enabling us to lower the cost to you.

That makes Lucide A-20 not only lower in cost — because less Lucide goes further, lasts longer, and does a better job — but actually lower in price.

More PCOs are using Lucide A-20 because it is completely stable, absolutely fireproof, never clogs nozzles or strainers, never needs to be shaken or agitated, and its residual effect is long-lasting on any surface, indoors or out. And Lucide's newly designed, more legible, informative label carries the PCE trademark — to ensure your getting Lucide when you ask for it.

New LOW prices make Lucide A-20 the ideal formulation for all uses of this toxicant.

1 Gal. Lucide A-20 plus 9 gal. water makes 10 gal. 2% refined grade Chlordane — residual formulation.
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ROACHES AND RATS

J-O Phosphorous Paste is so compounded as to eliminate the hazard of fire and possesses advantageous qualities peculiar to itself. A properly made **Phosphorous Paste** such as **J-O** is absolutely safe to use. It cannot burn or set fire to other substances.

Phosphorus, however, remains basic in the compound because it is the most toxic chemical used in pest exterminating, being more toxic than arsenic, strychnine or thalium. Approximately one-tenth of a grain will kill a rat. Phosphorous is a slow poison, taking from 6 to 18 hours to kill. Due to its slow but positive action, the rat succumbs to this poison. He becomes very uncomfortable and, seeking fresh air and water, in most cases, leaves the premises and dies in the open.

For all species of roaches, this product is **UNEXCELLED.**

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PCO NEWS...

Riedeburg Joins Hardy

Theodore Riededurg has been appointed sales manager of the newly created domestic sales department of M. W. Hardy & Co., Inc., 141 Broadway, New York 6, N. Y., internationally known distributors of heavy and fine chemicals, vegetable oils and allied products. Riedeburg was formerly with Dow and Westvaco in national sales and development work and more recently in charge of East Coast operations for McLaughlin Gormley King Co. The Hardy Co. will represent chemical manufacturers who desire sales assistance and better distribution and is particularly interested in working closely with producers and compounders of insecticides, fungicides and herbicides.

Hooker Produces C-56

The Hooker Electrochemical Co., Niagara Falls, N. Y., has commenced pilot plant production of hexachlorocyclopentadiene, or "C-56." Probable fields for the applications of this new chemical, according to the company, are insecticides, dyes, pharamceuticals, resins, germicides and fungicides.

The product is described as a yellow to amber colored liquid with a pungent odor. It has a molecular weight of 272.79, a boiling point of 236 degrees C., a freezing point of 2 degrees, a specific gravity of 1.715 at 15.5 degrees, and no flash point. Complete physical and chemical information is contained in Data Sheet No. 371, which can be obtained from the company.

Cossetta's Daughter Marries

Mr. and Mrs. Alfred A. Cossetta were hosts at the marriage ceremony of their daughter, Florene Evelyn, when she became the bride of Donald Louis Mellor on November 20th in Kansas City, Missouri. Al Cossetta was formerly editor of *PESTS and Their Control.*

CALENDAR OF MEETINGS

Eastern PCO Conference — January 31, February 1-2, 1949 at the University of Massachusetts, Amherst, Massachusetts (Dr. C. P. Alexander).

Pacific Coast PCO Conference — January 31, February 1-2, 1949 at the University of California, Berkeley, California — Sessions will be held at the Palace Hotel, San Francisco, Calif., in conjunction with the Annual Meeting of Pest Control Operators of California, Inc. (Professor E. O. Essig).

Purdue PCO Conference — February 7-8-9-10-11, 1949 at Purdue University, Lafayette, Indiana (Professor J. J. Davis)

Canadian PCO Conference — February 14-15-16, 1949 at the University of Montreal, Montreal, P.Q., Canada (Professor E. R. Bellemare).

Southern PCO Conference — January 27-28-29, 1949 at Louisiana State University Baton Rouge, Louisiana (Professor O. W. Rosewall).

Pennsylvania Pest Control Operators Short Course — April 14-15-16, 1948 at Pennsylvania State College, State College, Pennsylvania. (Write to Professor H. Frings at Pennsylvania State College for information).

New Jersey Pest Control Operators Short Course — Dates to be announced later. (Write to John K. Medoff, Chairman, 445-63rd Street, West New York, N. J., for any information).

Western Weed Control Conference — February 3, 4, Bozeman, Mont.

California and American Mosquito Control Associations joint conference, February 6-9, Berkely and Oakland, Cal.

Flies Spread Diarrhea

Dr. James Watt and scientist Dale R. Lindsay of the U. S. Public Health Service, believe they have conclusive evidence obtained from two year's research that flies are involved in the spread of diarrheal diseases which often attack babies, small children and even adults, often killing the younger victims.

PCO Robert Scott Mortally Shot

PCO Robert Scott, Termite and Pest Control Company, Los Angeles, California, died on October 19, 1948 as a result of an accidental shooting when on a hunting trip to William Lake, British Columbia. It is reported that he was mistaken for a bear. The bullet pierced Scott's heart and probably caused instant death.

Mr. Scott's business is well respected in Los Angeles and San Diego, California. He was the father-in-law of Ralph Gray and Herbert R. Packard, both of whom are in the pest control business.

Dr. George Barber Dies

Dr. George W. Barber, entomologist and associate research specialist at the New Jersey Agricultural Experiment Station of Rutgers University, died of a heart attack on December 6 while returning from a National Association of Insecticide and Disinfectant Manufacturers meeting. Dr. Barber was 58 years old.

He had been associated with the Department of Agriculture in studying methods of exterminating the corn ear worm in sweet corn before he joined Rutgers. Just prior to his death he was investigating the resistance of houseflies to residual insecticides.

Winter Joins Powell

Charles R. Winter, formerly with U. S. Rubber, has joined John Powell & Co., Inc., manufacturers of basic insecticide materials. Winter has been appointed regional sales manager for the North Central states. His headquarters are in Chicago.

It's a Boy for Breck

Mrs. Grace Breck, wife of Paul Breck of Action Pest Control Service, Oakland, California, gave birth to a 7 lb., 8 oz. baby boy on November 22, 1948. The Brecks, who already have two boys, have named their new son Anthony.

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Roaches, bedbugs, fleas, mosquitoes haven't a chance when you—

***Dust with* NEOCID A-10** — a ready-to-use DDT powder

***Spray with* NEOCID D-30** — after dilution with deodorized kerosene

These highly effective formulations were developed by Geigy Company, *"Originators of DDT Insecticides."* They are backed by 9 years of experience in DDT compounding and application.

If your local dealer doesn't have these NEOCID* DDT Compositions, just send us his name and address.

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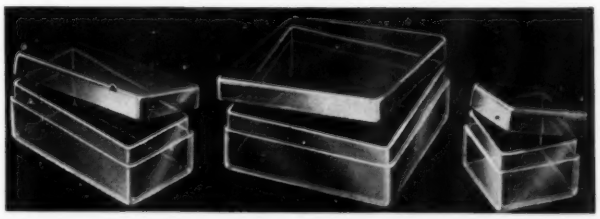

For keeping insects and other specimens in orderly arrangement, for quick reference.

These transparent boxes protect specimens, both before and after identification. They enable you to build up a valuable permanent collection of specimens for future reference.

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A 15/16" x 15/16" x ¾"; **B** 1-⅞" x 15/16" x ¾"; **C** 1-⅞" x 1-⅞" x ¾".

PRICES

A: **20** for $1; **100** for $4.60. B: **15** for $1; **100** for $5.60. C: **12** for $1; **100** for $6.60.

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No. 1 8 **A**, 4 **B**, 4 **C** $1; **No. 2** 60 **A**, 20 **B**, 16 **C** $5.00.

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DDT Failures Examined by NAIDM at New York Convention

Open discussion and thorough examination of the factors responsible for recent failures of DDT to control flies was the theme of the thirty-fifth annual meeting of the National Association of Insecticide and Disinfectant Manufacturers, held at the New Yorker Hotel, New York, December 6 and 7.

Dr. E. F. Knipling, head of the division of insects affecting man and animals of the Department of Agriculture, and Dr. Alfred Weed, of John Powell & Co., New York, led the discussion. The audience also participated by asking questions and voicing opinions from the floor.

According to Knipling, the Department of Agriculture became interested in the fly control problem in 1947 when it received reports from all over the country of DDT failures. 1948 showed an increase of these reports. Knipling pointed out that although flies do develop resistance to DDT, the areas studied showed a 75 per cent decrease in the fly population after the application of DDT.

The discussion closed with a resolution introduced by Friar Thompson, R. J. Prentiss & Co., New York, asking the association's marketing committee to obtain all the information possible on the "resistance" problem and to submit it to the members to help them develop better insecticides.

All present officers were reelected for another term. They are: president, Gordon M. Baird, Baird & McGuire, Inc., Holbrook, Mass.; first vice-president, L. J. Oppenheimer, West Disinfecting Co., New York; second vice-president, C. L. Weirich, C. B. Dolge Co., Westport, Conn.; treasurer, John Powell, John Powell & Co., New York, and secretary, H. W. Hamilton, H. W. Hamilton Co., New York.

Members elected to the association's board of governors are: Howard F. Williams, J. R. Watkins Co., Winona, Minn. (two year term); J. L. Brenn, Huntington Laboratories, Huntington, Ind.; T. Carter Parkinson, McCormick & Co., Baltimore, Md., and R. T. Yates, Hercules Powder Co., Wilmington, Del. (three year terms).

President Baird, in his annual report, said that the industry should be doing more business, and he disagreed with members of the association who felt that the household insecticide business was dead. "It is due to stage a strong comeback and in the not too distant future. But it will require greater effort and greater sales activity."

Gordon M. Baird

Secretary Hamilton reported that NAIDM recommendations on ingredient statement requirements for household and industrial products are being generally ignored. He said that the industry cannot allow dictatorial powers to be legislated into the hands of one or two men and that individual companies have a right to their trade secrets. "While we may be able to pay registration fees, and add the cost to our products, we must protest this practice as creating an expensive nuisance without worth to officials or consumers. In most states it will not pay for the paper work alone to say nothing of policing, analytical checks and development."

Dr. Hamilton paid tribute to New York State where there is no discrimination against manufacturers and no registration fee. New York's law is adequate and well enforced. It protects all the people of the state.

Rats Burn Up Velodent But Now Die for Them

Bill Spero, vice-president of Velodent Products Manufacturing Co., New York City, relates how his company happened to get into the manufacture of rodenticides.

For ten years, Velodent specialized in the manufacturer of toothpaste and shaving cream and was doing a nice business. (Now you remember where you've heard that name before). Then, one night rodents completed a job of gnawing the electric wiring at Velodent's plant and the place went up in smoke . . . well, there was a fire, anyway. The management was naturally unhappy about this, but they repaired the damage and continued to provide customers with supplies to make people look and smile pretty.

But those Norwegian rascals were not to be thwarted in their work, so they started chewing all over again. Maybe the wires had a licorice flavor. It wasn't long before . . . yep, you've guessed it, the place got so hot it made the toothpaste run like hand lotion. In fact, the place went up in flames again.

"Rats!" said the Velodent boys when they could clear away the smoke to sit around their charred conference table. "Enuf is too much. If they want food, we'll give them something to eat. Toothpaste is out and rat poison is in!" And so the entire course of their business was changed. Velodent began offering, for the first time, a complete, ready-to-use food bait in tubes, incorporating the use of fortified red squill and Antu. They now manufacture a half-pound tube to fit the PCOs kit, and small 2 and 4 ounce sizes for PCOs to sell over the counter. They have U. S. and Canadian distribution.

Burned up at the rats, Velodent fired away at their enemy and pasted up a new business program for better, fire-free days ahead.

What's the best way to control food insects?

Here's your answer—PYRENONES*

Because insecticides based on Pyrenones give you fast knock-down and good residual protection — *without* toxic hazards of practical significance.

Whether you treat warehouses or delicatessens — whether you use "space" sprays for fast action . . . oil or emulsion sprays for surface control . . . or powders for long-lasting effectiveness—*your best bet is* Pyrenones. They'll make a hit with your operators, too, because *they're easy to handle!*

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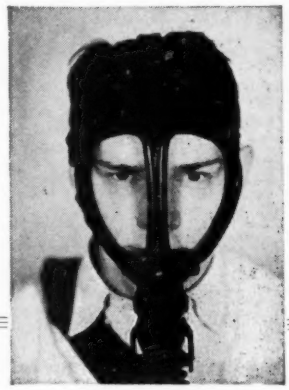

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FOR EFFECTIVE RAT CONTROL

Phosphorous Paste
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Orthodichlorobenzene, Creosote Oil, Sodium Arsenite Powder, Pentachlorophenol Concentrate

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Write for Information. Foreign Inquiries Invited

Prevention of Deterioration Abstracts Available

The National Research Council, Prevention of Deterioration Center, room 204, 2101 Constitution avenue, Washington 7, D. C., has announced the availability of its serial publication, "Prevention of Deterioration Abstracts,' on a yearly subscription basis. Each year there will be published two volumes of six issues each, with an approximate total of 2,000 pages. The initial subscription rate, which includes two sturdy binders and index guides, is $37.50 a year from July 1 to June 30. Requests received after July 1 will be charged at a rate of $50.

These abstracts are classified under the following headings: Biological agents; electrical and electronic equipment; fungicides and other toxic compounds; lacquers, paints, and varnishes; leather; lubricants, metals; miscellaneous; optical instruments and photographic equipment; packaging and storage; plastics, resins, rubbers and waxes; textiles and cordage; wood and paper. Author and subject indexes are compiled at the conclusion of each volume and cross references are a part of each issue. Material for the abstracts is obtained from journal articles, patents, and unpublished reports from government, university, and industrial research groups both here and abroad.

Subscriptions, inquiries and other communications should be addressed to the address given above.

Spraying Systems Moves

Spraying Systems Co. has announced they have moved to new and larger quarters at 3201 Randolph Street, Bellwood, Illinois. Bellwood is a suburb of Chicago.

2,000 Cities Blitz Pests

According to an *Associated Press* release, over 2,000 U. S. communities conducted city-wide campaigns last summer. Flies and mosquitoes were the main objectives. Some used fogs and some sprays of pest-killing chemicals.

John Powell, retiring president of John Powell & Co., Inc., is presented with flight around the world ticket at testimonial given in his honor. Left to right: Dr. Alfred Weed, H. Alvin Smith, Mr. Powell, William Pollert.

John Powell Retires As Head of His Company

John Powell announced on December 16th that he was retiring as president of John Powell & Company, manufacturers of insecticides, New York. The announcement was made at a reception given in his honor at the Vanderbilt Hotel in New York.

Mr. Powell said this was the completion of plans started some time ago for the acquisition of his interests in the company by his associates William J. Pollet, H. Alvin Smith and Dr. Alfred Weed, vice presidents who now assume complete control of the company.

Highlight of the reception, attended by more than 150 company employees, friends and associates in the industry, was the presentation of a Pan American World Airways ticket for a trip around the world, a gift of the company as a token of affection to Mr. Powell.

H. Alvin Smith, executive vice-president, was the first to speak in tribute to Mr. Powell's leadership in the insecticide field. Ira P. MacNair, of MacNair-Dorland Co., acted as toastmaster.

Mr. Powell, who has been associated with the insecticide industry for more than 35 years, began his own company in 1923 after having been with J. L. Hopkins Co. for five years and with Stallman & Co. for more than one year. He is an active member of the National Association of Insecticide and Disinfectant Manufacturers and will continue to serve as treasurer of that organization.

Dr. Snyder Elected President

Dr. Thomas E. Snyder, senior entomologist, Bureau of Entomology and Plant Quarantine, USDA, has been recently elected president of the Entomology Society of Washington, D. C. He has informed us that he wishes to extend to resident and non-resident members of the NPCA a cordial invitation to attend the meetings of this society held on the first Thursday in every month except July, August and September. Meetings are held on the first floor of the U. S. National Museum, 10th and Constitution avenues, at 8 p.m.

Herbert Meyer Retires

Herbert Meyer, partner in the Fumex Sanitation Company, Jamaica, New York, announced his decision to retire as of November 19, 1948. This partnership has existed since 1934 with Chester Schwimmer who plans to continue in the pest control business.

Meyer, who has been a PCO for more than 23 years, is a loyal supporter of the NPCA.

Snow-Water Mosquito Control

Snow-water mosquitoes, a summer pest in a number of Northwestern states, can now be controlled by spraying dry swales and low areas the previous fall with sprays containing DDT and similar insecticides, according to recent USDA reports.

Entomologists of the Bureau of Entomology and Plant Quarantine have found that pre-hatching sprays applied in September and October kill off snow-water mosquitoes (also known as mountain mosquitoes) before they reach the flying stage the next year. States in which these mosquitoes are found include: Oregon, Washington, California, Idaho, Wyoming and Colorado.

Females of the snow-water mosquitoes lay their eggs on soil or duff in moist depressions, others just above the water line along shores of temporary ponds in swampy places, which are filled with snow and ice during winter months. The eggs hatch when the snow and ice melts. New broods develop with the receding snow line, and great numbers of these fierce biters attack everyone passing through infested territory.

Oil solutions, water emulsions, wettable powders, and dusts of DDT are about equally effective for snow-water mosquito control. A simple way to apply dust and wettable powders over breeding areas is by hand broadcasting. Entomologists who conducted USDA tests recommend one pound of active ingredient per acre, which would require two pound of 50 per cent wettable powder, 10 quarts of five per cent oil solution, or ten pounds of a ten per cent dust per acre.

DDT Typhus-Malaria Control

Catalog No. FS 2.7/a:2878 entitled "Combined Typhus-Malaria Control Residual Spray Operations with Five Per cent DDT Emulsion" is a 1948, nine page government publication, giving procedure and results, that can be obtained by sending five cents to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

New Chapman Bulletin

"Protecting Your Investment in Wood," is a new brochure telling the story of wood decay just issued by the Chapman Chemical Co., Suite 770 Dermon Building, Memphis 3, Tenn. This bulletin tells how and why decay occurs and shows treating methods with Chapman Penta Preservative. Copies can be obtained without charge.

Believes Insects Carry Polio

Dr. J. Harry Murphy, medical advisor to the National Foundation of Infantile Paralysis in Omaha, Neb. pediatrician says, after studying polio from a geographical standpoint for over 11 years, that the virus is apparently transmitted by mosquitoes or some other insect — not from person to person.

Polio follows waterways, drainage systems and depressions in the ground; it seldom strikes those who live on hilltops. Polio comes to both densely and sparsely populated areas, to both rich and poor neighborhoods, he says.

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Henry A. Nelson

Nelson Retires After 30 Years in Chemical Business

Henry A. Nelson, president of the Chemical Supply Company, Cleveland, Ohio has announced his retirement, effective December 1st, from the company he started with thirty years ago. He and Mrs. Nelson will spend the next several months traveling through the Southern states and California and expects to visit England and his native Holland during the spring of 1949.

Beginning as a stenographer of the Chemical Supply Company in 1919, Nelson was elected vice president and general manager in 1924, and has served the company as its president since 1938. He is a past president of the National Association of Insecticide and Disinfectant Manufacturers, and is presently serving as Consul of the Netherlands for the state of Ohio. Henry Nelson is the father of the editor of this magazine.

Drew Bulletins Available

E. F. Drew & Co., Inc., Boonton, N. J., has recently published two technical bulletins on new emulsifying agents. One is about "Chlorsol," a solubilizing agent for chlordane, and the other is on "Base 401M," an agent for the preparation of emulsifiable DDT, BHC, Toxaphene or Chlordane concentrates. Copies of these bulletins can be obtained by writing E. F. Drew & Co.

Reveal Some Insecticides Depress Plant Growth at AAEE Meeting

At the 60th annual meeting of the American Association of Economic Entomologists held in the New Yorker Hotel, New York, December 13-16, Frank P. Cullinan, assistant chief bureau of plant industry, soils and agricultural engineering, USDA, declared that DDT, BHC, chlordane and toxaphene all will depress the growth of some seedling plants when applied to soil.

Research in the past four years, Cullinan said, has brought to light a lot of questions that need to be answered and that there are now some basic facts from which to proceed.

The AAEE meeting, a series of joint sessions with the Entomological Society of America, was presented with over 100 technical papers at sessions on plant pest control and quarantine, agriculture, medical entomology, toxicity of insecticides to plants and animals, formulation of insecticides, teaching entomology and many other problems and topics of current interest.

Lea S. Hitchner, executive secretary of the Agricultural Insecticide and Fungicide Association, told the group of a plan to change its name to the National Agricultural Chemicals Association, establish headquarters in Washington and greatly expand its membership which is now restricted to basic producers and reprocessors and re-mixers. When the change is made, membership will be available also to custom applicators, equipment manufacturers, raw material suppliers, regional pesticide associations, dealers, scientists, Federal workers, farm representatives and representatives from allied industries such as the food industry and the dairy industry.

NPCA executive secretary William O. Buettner represented the structural pest control industry with an address entitled, "The Role of the Entomologist in Structural Pest Control." This address will be reprinted in the February issue of *PESTS*.

NAIDM secretary Dr. H. W. Hamilton, asked the entomologists to work with the insecticide manufacturing industry in promoting a new phrase to describe the group of products now classed as economic poisons. The use of the word "poison" is becoming all too common, Dr. Hamilton stated, and that recent developments indicate that it is a misnomer as used. It is a scare word, he said, and there is no need of a scare word on insecticide as a general group.

Mo. Insect Bulletin

"Control of Household Insects" is the name of Circular 328, published by the University of Missouri Experiment Station by Leonard Haseman. Included in this bulletin are suggestions on how to protect property from termite and powder-post beetle infestation and also how to get rid of these pests. Protection and control procedures are given also for clothes moths, carpet beetles, tow bugs, mosquitoes, fleas, human lice, the house fly, bedbug, itch mite, chiggers and ticks. Circular 328 may be obtained without cost by writing the University of Missouri College of Agriculture at Columbia.

Starling Control Successful

Associated Press reports that thousands of starlings which flocked nightly into Decatur, Ill. trees and business areas recently, are no longer present, thanks to shotguns and five tin owls. Several shotgun blasts chased many of the pests. Then the double-faced owls, originated in Decatur to frighten starlings, finished the job.

Why Rats Used for Tests

Q. Why are rats used for experimental purposes?

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PCOs Benefit From Bakery Sanitation --- Holmes

Professional pest control operators are benefitting directly from the three-year-old bakery sanitation program of the American Institute of Baking, Dr. Edward L. Holmes, director of the Institute's sanitation department, asserted in Chicago recently.

Since inauguration of the project in 1945, the Institute, he said, has succeeded in arousing the industry's management to a keen awareness of the problem presented by insects and rodents in bakeries and to a recognition of the need for a scientific, professional approach to control measures.

While some bakers have been following through by doing their own extermination work, the industry on the whole, Dr. Holmes declared, has sought the assistance of experienced operators for treatment of their plants. This, he said, is especially true of many of the larger companies, which make regular, systematic use of commercial pest control services.

The primary objective of the Institute's sanitation project, Dr. Holmes stated in an interview with a representative of Pests and Their Control, during the American Bakers Association convention, is to instill an understanding and realization of the results which can follow from unsanitary maintenance of the baker's facilities.

Eighty per cent of the educational effort, he said, is devoted to showing the baker where and how contamination may arise, whether from rodents, insects or bacteria, while the remaining 20 per cent of the program deals with control measures to apply when infestations are found. Attention is also given to the matter of personal hygiene.

The baking industry, Dr. Holmes said, is confused by the innumerable array of brand name chemicals offered for pest control work. The Institute, accordingly, offers information on what basic ingredient, pyrethrum for example, is effective against what insects, and recommends that in purchasing insecticides or rodenticides, the baker should see that the product contains the chemical specified for the job on hand. Authoritative information on which the recommendations are based, comes, he said, from government sources and from the National Pest Control Association.

Newest feature of the Institute's educational program is a planned inspection service, offered to members of the American Bakers Association, to assist them in organizing systematic pest control programs in their plants. Only three inspectors are at present available for this work, but, as demand increases, this staff will be increased, it was stated.

Other educational media used include lectures, informational bulletins and articles in the trade press, and posters for hanging in the bakery plants, which emphasize the sanitary aspects of bakery operations.

Of primary importance, however, are the series of formal schools of instruction offered at intervals of two months or more in various cities around the nation. Last of these for 1948 was scheduled for San Francisco, Dec. 6 to 10. This year's plans call for continuation of the series of courses in Chicago, in February; Baltimore in June; Denver in September; Cincinnati, in October; and Los Angeles in December. Dr. Holmes emphasized that these classes are strictly for bakers only.

Autobiography of Ant Authority

Dr. Thomas E. Snyder informs us of a book PCOs mak like to add to their library. It is "Ant Hill Odyssey" by W. M. Mann, published by Atlantic Monthly Press; Little, Brown and Co., Boston; has 338 pages, six illustrations, five maps and sells for $3.50.

This is an autobiography of the colorful director of the National Zoo at Washington, D. C., who has traveled widely over the face of the earth collecting insects and other animals. Dr. Mann is a world authority on ants and frequent references occur to ants and other insects in his vivid reminescenses including experiences among the cannibals in Fiji.

Insecticide Paint More Poisonous As Time Goes By

According to an AP story, studies by the University of Florida indicate paint treated to kill insects becomes more rather than less poisonous as time goes on. The University's engineering and industrial experiment station made tests with insecticidal paints, lacquers and varnishes over a two two year period.

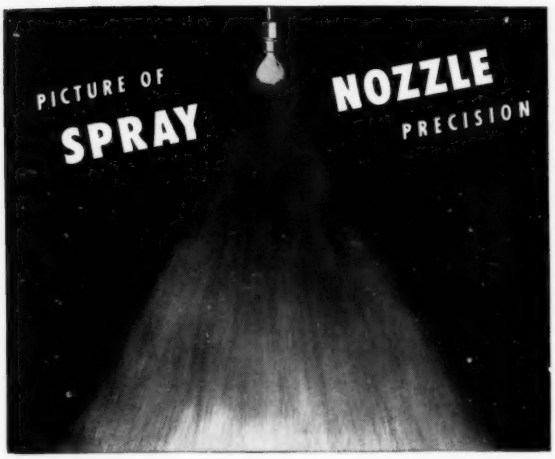
"It was observed that the coating surfaces did not become less toxic, but rather more toxic with age," S. S. Block of the experiment station reported. He said the insecticide appeared to force itself gradually to the surface of the paint to form tiny crystals. The crystals were produced because the paint was so full of the poison that it threw some of it off from time to time.

Because of this characteristic, poison which was lost through wiping or washing the painted surface was replaced shortly after being removed. One test, made with asphalt varnish mixed with DDT, showed the poison crystals appearing as a white dust on the surface of the painted article.

"When the surface was wiped with a cloth, the crystals were removed and the surface was as black as when the coating had been applied. Within three to four days after removal of the dust, it had again reappeared," Block said. "This process was repeated several times with similar results. Even after several months, when the same surface was again wiped clean, the crystals of DDT reappeared at the surface within a few days."

Though most of the station's experiments were with DDT, several other insecticides were tested and similar results were obtained.

Block said there is no risk of poisoning people in the use of this paint. It acts the same as sprays now used on walls for killing insects and is no more dangerous. If the paint should peel and fall off, it should be kept out of food.



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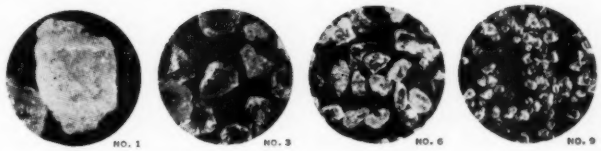

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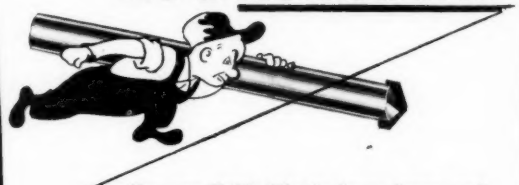

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ORGANIZATION NEWS...

N. J. Elects PCA Officers

Officers for 1949 were elected at the fourth annual dinner of the New Jersey Pest Control Association, Inc., at Perris' Restaurant, Newark, N. J. on December 9, 1948. Newly elected are: president, Robert Campbell; first vice-president, Sal Jordan, second vice-president, Walter Boyce; secretary, Harry Stucker and treasurer, Harold Kutakoff.

Present at the dinner were the following honored guests: Dr. and Mrs. W. H. Martin, Dr. and Mrs. Bailey B. Pepper, Dr. and Mrs. John B. Schmitt, Mr. and Mrs. Ernest Mills, Prof. and Mrs. Robert Fillmer, Mr. and Mrs. William O. Buettner, Mr. and Mrs. Sidney Wimmer, and Mr. and Mrs. Charles Pomerantz.

Virginia Assn. Reelects Church

Luther Church, Getem Mfg. Co., Norfolk, was reelected president of the Virginia State Pest Control Association at its last meeting held November 20th. Other officers chosen were: vice-president, Henry Glasgow, Roanoke Exterminating Co., Salem, Va.; secretary-treasurer, C. E. Gerhardt, Orkin Exterminating Co., Roanoke; directors, H. W. Cowardin, Terminex Engineers, Richmond, and William E. Roll, American Disinfectant Co., Washington. It is reported that the association is developing a program which will enable it to present short courses in the future at Virginia Polytechnique Institute.

Ohio PCOA Officers

In our haste to report the fourth annual conference of the Ohio Pest Control Operators Association at Columbus, December 1, 2, 3, 1948, we neglected to mention the officers and directors elected for 1949. They are: Herman C. Militzer, Toledo, president; William Warthen, Cincinnati, vice-president; J. L. Purdy, Hamilton, secretary-treasurer. Directors are: Arthur L. Davis, Dayton; Harold J. Portwood, Akron; Plummer E. Diehl, Salem; Richard Andes, Columbus; and Robert Sikorski, Cincinnati.

Michigan PCOA Elect Officers and Hear J. J. Davis

The annual meeting of the Michigan Pest Control Operators' association was held at the Wolverine Hotel, Detroit, on Friday, December 3. Officers elected for 1949 are: president, Leon Carr, Owosso, Mich.; vice-president, O. L. Potter, Trenton, Mich.; secretary, Harold Smitter, Grand Rapids, Mich.; treasurer, Fred Kuhn, Grand Rapids, Mich. The new directors include: chairman, John Spyre, Detroit; Peter Lynch, Detroit; M. S. Sempliner, Detroit; Albert Bushouse, Kalamazoo, Mich.; John Evans, Battle Creek, Mich.; Harry Sinclair, Lansing, Mich.; and James Iobson, Bay City, Mich.

Myron Sempliner of Detroit, chairman of the Investigating committee for accidents and frauds in the Michigan pest control industry, read a report on this phase of the industry. It is reported th . the survey is not yet completed.

Albert White, past president, presided as toastmaster at the annual dinner held in the evening. The main speaker was Professor J. J. Davis, Chief of Entomology at Purdue University, who presented a talk on the relationship of Entomologists and Pest Control Operators. Professor Davis expressed the opinion that PCOs will soon be on a professional basis. He asked the members to establish a closer relationship with neighboring state organizations such as Ohio and Indiana.

Ectoparasites Discussed at New England PCA Meeting

"Biology of Some Common Ectoparasites" was the subject of Harvard University's entomology professor Frank M. Carpenter's talk given at the December 15th meeting of the New England Pest Control association held at Boston's Lenox Hotel. The discussion was regarded as particularly valuable since it gave members a basis for a better understanding of "pest of the year" talks on ectoparasites to be given at the 1949 Eastern PCO Conference.

Charlie Houghton was in charge of the meeting which began with an opitional dinner. All '48 officers were re-elected for 1949. They are: president, Kenneth Cook; vice-president, Ed Maguire; treasurer, Bart Eldredge; and secretary, Bill Mongeau.

Wisc. PCO Conference

Dates for the annual Wisconsin PCO Spring Conference have been announced as March 29, 30 and 31. This state meeting is held in cooperation with and under the auspices of Wisconsin University at Madison. Anyone interested in attending this conference should contact either Mr. H. E. Johnson of the Owl Exterminating Co., 1337 Blaine Blvd., Racine, Wisc., or Mr. Lewis Kelly of Solvit Chemical Co., Speedway Road, Madison, Wisconsin.

Election at D. C. PCA

At the annual election meeting of the Washington, D. C. Pest Control association held December 14th at 1321 K Street, N. W., the following were chosen to serve for 1949: president, A. H. Bender, Bender Termite Control Co.; vice-president, B. J. Hayes, Action Pest Control Co.; secretary-treasurer, William E. Roll, American Disinfectant Co.; director (1949-50), Larry Shaw, Extermination & Chemical Co.; and director (1949), S. Durham, Johnson E. Gaskins Co. Secretary Roll reports a year of activity is anticipated with a bigger and better kill of pests in the metropolitan area.

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The National Pest Control Association seeks a man qualified to help organize and to direct a permanent technical program, to include field work and phases of public relations. Advanced training in entomology, biology and/or chemistry essential. Background in pest control and aptitude for organizational work advantageous. Correspondence will be treated strictly confidential. Submit qualifications or direct inquiries to Executive Secretary, N. P. C. A., 3019 Ft. Hamilton Parkway, Brooklyn 18, New York.

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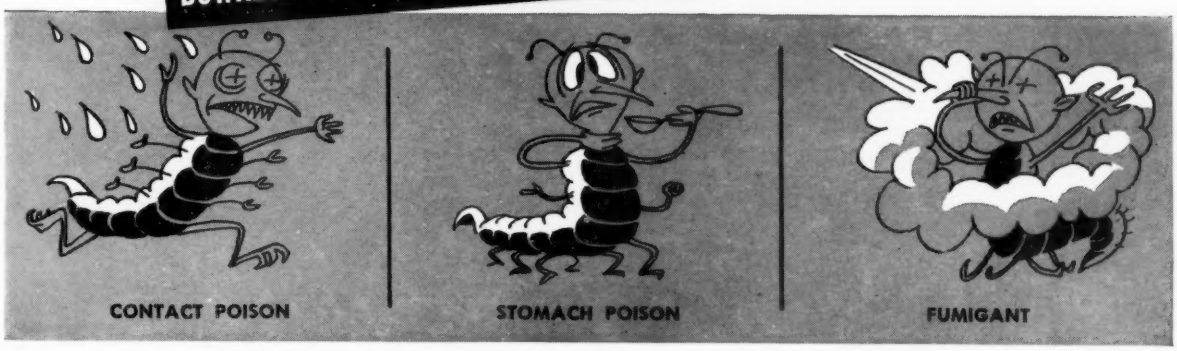

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50-gal. drum	87.50 dr.	2.40 gal.

If you are interested in jobbing Cook-Kill, write us outlining the territory and number of accounts you service.

NOTE: Freight Paid on All Sales of 100 Lbs. or Over!

Cook Chemical Company

935 North Wabash Avenue
KANSAS CITY 1, MISSOURI

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